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An Evaluation Of Two Career Development Programs For Adults

by

© David A. Wasserman

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF Doctor of Philosophy

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THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled An Evaluation Of Two Career Development Programs For Adults submitted by David A. Wasserman in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

Dedication

This work is dedicated to Lynn Wasserman, without whom it would not have been possible.

Abstract

This study examines the effectiveness of two career development programs for adults offered by the Alberta Career Centre, Edmonton. One program, the Career Planning Workshop (CPW), involves 27 hours of classes spread over nine weeks, while the other program, the Occupational Choice Seminar (OCS), takes seven continuous hours. A comparison group of adults who had expressed an interest in career development but who did not come to the Centre was also studied. Theories of career development were reviewed, including those of Super, Tiedeman and O'Hara, and Hall. The question of the most effective way to measure career development in adults was examined. Two new instruments, the Career Needs Survey and the Career Development Behaviours Checklist, were developed for the study. Super's Career Development Inventory Adult Form I and Slaney's Occupational Alternatives Question were also used, as well as questionnaires and interviews.

It was found that only the Career Needs Survey showed a treatment effect, and that both programs were about equally effective. Other analyses showed that clients could not accurately estimate their aptitude scores, as the OCS requires, that neither client nor instructor judgments of success were related to the results of the Career Needs Survey, that how important work is to the client's life satisfaction had no effect on program effectiveness, and that client success could not be predicted from demographic

variables.

Eight recommendations are made: that both workshops be continued, that the Career Needs Survey be used for future evaluations, that instructors' evaluations of client success not be used for program evaluations, that client evaluations not be the sole criterion of instructor effectiveness, that clients not be directed to a particular program on the basis of demographic data or of any of the career development measures used, that clients be informed that the programs are somewhat more suitable for those with more recent school experience, that OCS participants be given the opportunity to take an aptitude test, and that the CPW be reduced in length to six sessions.

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Table of Contents

Chapter Page

I. Introduction and Overview 1

II. Review of the Literature 8

A. Career Development Theory 8

Development of Career Development Theory 12

Approaches to Synthesis 27

B. Program Evaluation 34

C. Evaluations of Career Development Programs 37

D. Summary 41

III. The Programs 42

A. History 42

B. Description 43

Career Planning Workshop 43

Occupational Choice Seminar 45

C. Evaluation Questions 46

IV. Method 48

A. Design of the Quasi-experimental Study 49

Subjects 49

Instruments 49

Design 53

B. Hypotheses for the Quasi-experimental Study 54

C. Other Elements of the Evaluation 55

D. Hypotheses for Other Evaluation Questions 57

V. Accuracy Of Aptitude Self-Estimates Of Adults 63

A. Method 66

B. Results 68

C. Discussion 73

VI. Results and Analyses 77

A. Hypothesis 1 78

B. Hypothesis 2 86

C. Hypothesis 3 87

D. Hypothesis 4 89

E. Hypothesis 5 89

F. Hypothesis 6 90

G. Hypothesis 7 90

H. Hypothesis 8 92

I. Hypothesis 9 94

J. Hypothesis 10 94

K. Hypothesis 11 95

L. Hypothesis 12 95

M. Hypothesis 13 97

N. Instructor Interviews 97

VII. Discussion, Conclusions, and Recommendations 102

A. Program Effectiveness 102

Recommendation 1 105

B. Measurement of Career Development 105

The Career Development Inventory 106

The Occupational Alternatives Question 109

Career Development Behaviours Checklist 111

Career Needs Survey 113

The Evaluation Questionnaire 115

Instructor Evaluation 116

Recommendation 2 116

Recommendation 3 116

Recommendation 4 117

C. Design of Career Development Program Evaluations 117

D. Screening of Clients 117

Recommendation 5 120

Recommendation 6 120

E. Work Importance and Career Development 121

F. Use of Aptitude Measures 123

Recommendation 7 123

G. Program Length 123

Recommendation 8 124

H. Limitations of the Study 124

I. Suggestions for Further Research 124

J. Summary List of Recommendations 126

Reference Notes 127

References 128

Appendix A 135

Appendix B 176

Appendix C 181

Appendix D 182

Appendix E 186

Appendix F 187

Appendix G 189

Appendix H 190

Appendix I 192

List of Tables

Table	Description	Page
1	Means and Standard Deviations, Estimated and Actual Aptitude Scores and Estimation Errors	70
2	Correlations of Estimated and Actual Aptitude Scores, Full Sample, and Grouped by Sex or Educational Level	71
3	Correlations of Estimated and Actual Aptitude Scores, Employment Status and Age Subgroups	72
4	MANOVA, Pretest Measures of Career Development	80
5	Univariate *F*-tests for Treatment Group On Pretest Measures of Career Development	81
6	Univariate *F*-tests for Treatment Group On Follow-Up Measures of Career Development	83
7	Stepdown *F*-tests for Treatment Group On Follow-Up Measures of Career Development	83
8	Employment Status and Treatment Group	88
9	Employment Status and CPW Completion	91
10	Time Since Last in School and Success	93
11	Work Importance and Success	96
12	CPW Completion and Success	119

List of Figures

Figure	Description	Page
1	Scaled Values For CDBC Items	52
2	Career Needs Survey Results	103
3	Evaluation Questionnaire Results	104
4	CDI Pretest Substage Scores	108
5	Occupational Alternatives Question Groups	110
6	Occupational Alternatives Question Alternatives	112
7	Life Satisfaction Rankings	122

I. Introduction and Overview

A career is a long-term phenomenon, developing slowly, responding to a variety of forces. Career choice is also long-term, a result of many cumulative, interacting internal and external factors. Career planning has traditionally focussed on career choice, although it is generally recognized now that the act of choosing a particular occupational goal is not the entirety of the career planning process. Indeed, it is a principle of career education that all career choices are tentative (Hoyt, Evans, Mackin, & Mangum, 1974). Nevertheless, programs designed to facilitate career choice, or, in broader perspective, career development, have often been relatively brief. The question arises whether such brief interventions can have any lasting effect on career development. A closely related question is whether program length is connected with program effectiveness.

This research examines the effects of two career development programs given at the Alberta Career Centre in Edmonton. Participants in the program are adults seeking assistance with career concerns who have chosen these programs from a variety offered by the Career Centre. One program is an intensive one-day seminar, while the other has one three-hour session per week for nine weeks. A comparison group receiving no services is also examined. Aspects studied include participant demographics, program curriculum and program effectiveness. Wider issues which are examined

include questions of measurement of career development and of self-knowledge of aptitudes, and the relationship of various theories of career development to the programs and their effects.

The concept of career development has had a relatively brief history, but has been widely accepted. The work of Ginzberg, Ginsburg, Axelrad, and Herma (1951) signalled a shift of emphasis in vocational guidance from a trait and factor perspective to a developmental viewpoint. Super (1953, 1957, 1969, 1980) has had probably the most influence in promoting the idea that careers follow developmental principles, with individuals passing through a fixed succession of qualitatively different stages over their life span, each stage having certain developmental tasks to be completed.

According to Super (1969), the trait and factor approach is based on a psychology of occupations, derived from differential psychology. This approach is interested primarily in comparing the psychological characteristics of people in different occupations. In contrast, the vocational development perspective is based on a psychology of careers, derived from developmental psychology, and is concerned with changes in individuals over time.

Although Super's model has grown more detailed and encompassing, research to test the many constructs involved has not been as common as the popularity of the model would lead one to expect. One reason for the dearth of data is the

long-term nature of career development. Changes take place slowly, and longitudinal or cross-sequential research designs are indicated (Crites, 1974). Only two such designs seem to have been carried out: Super's Career Pattern Study and the Career Development Study of Gribbons and Lohnes (1968).

Because most formal career development programs are carried out in educational institutions, there is usually a considerable time lag before developmental changes have an opportunity to be expressed in vocational behaviours. A student is usually committed, at least temporarily, to a course of studies. Programs are usually long-term, and have entry and exit points only once or twice a year. Thus attempts to evaluate career development on the basis of behaviour would require up to several years to pass after completion of the program intended to facilitate career development. As a result, most research attempts to measure attitudinal changes rather than behavioural changes.

Measurement of attitudes poses more problems than measurement of behaviours. Attitudes are unobservable, and must be measured indirectly. Behaviours can usually be described more exactly, with less possibility of measurement error. If standardized, validated, and reliable attitudinal measures exist for a particular construct, the problems are not as serious.

Unfortunately, measurement of career development or career maturity has not reached this level, especially for

adult subjects. The Career Pattern Study (Super & Overstreet, 1960) and the Career Development Study (Gribbons & Lohnes, 1968) used structured interviews. This approach was appropriate for longitudinal exploratory studies, but does not lend itself to easy use and reliable results in less elaborate designs.

Perhaps the standardized instrument of longest standing is Crites' Career Maturity Inventory Attitude Scale (Crites, 1973). However, the CMI is not standardized to cover the adult population, and contains inappropriate item content for this group. For adult use, one, and perhaps the only, available measure is the Adult Form I of Super's Career Development Inventory (Super, Zelkowitz, & Thompson, 1975), which has not yet been commercially published.

With adults, however, behavioural measures of career development are easier to obtain than with students, and deserve to be considered, even for relatively time-limited designs. Super and Kidd (1979) have suggested their use in measuring the Implementation substage of Super's Exploration lifestage:

> For work with adults, it is suggested that the first two types of attitudes and behaviours (Crystallization and Specification) may be useful in suggesting items which are not empirically distinguishable from other aspects of Exploration. This is because the psychomotor actions involved in Implementation (e.g., filing an application) are

> likely to be more clearly distinguishable than are the verbal attitudes and behaviours of Crystallization and Specification. (p. 263)

Career development assistance for non-student adults is not as widely offered as for students. Educational institutions generally limit use of services to prospective students, and employment agencies (public or private) are more specifically interested in occupational choice and job placement than in career development with a broader spectrum of possible outcomes. Perhaps this situation explains why less research seems to have been conducted into programs facilitating adult career development than into programs aimed at other groups.

The Alberta Career Centres have been established by the provincial government to assist adult Albertans with career development. Programs make no assumptions as to the arena of desirable outcomes, allowing for educational planning, job change, job enrichment, or life enrichment as results of the career development process.

The Career Centres offer a variety of career development services, including individual counselling, occupational information, self-guided exploration approaches, and group workshops. Although the services are popular, evidence of their effectiveness is not readily available. A formative evaluation which could establish the strengths and weaknesses of the services would be of value in guiding development of the programs. The group workshops

are best suited for evaluation because of their popularity and the standardization and structure of their formats. Two of the programs at the Edmonton Career Centre are a one-day career development workshop, called an Occupational Choice Seminar (OCS), and a nine-week, three hours per week, program called a Career Planning Workshop (CPW). Both programs are available at no charge to all adults.

Both programs use the same development/planning model: Self-knowledge is explored and organized, career alternatives are generated, information on the alternatives is gathered, a choice is made, and action to reach the goal is planned. The occupational information section of both is structured around the occupational profiles used in the Canadian Classification and Dictionary of Occupations (CCDO). Major differences are the time-span, and the use of the General Aptitude Test Battery (GATB) in the longer program. The CPW was developed from the Creating a Career program produced by the Canada Employment and Immigration Commission.

Because the program participants are generally free to act quickly on their decisions, it is possible to measure program results in a more direct way than can be done with programs whose participants are students. Behaviours in the time immediately following program completion can show if career development has taken place. Because of the availability of a non-treatment comparison group at the time of the study, an opportunity existed to discover how

effective this approach to measurement of career development can be.

The portions of the career development process which are experienced by adults have been less researched than those portions that are part of the lives of students, presumably because of students' greater accessibility as a group. Non-student adults generally attack their career development problems individually and with a minimum of formal assistance. The program participants and comparison group allow the examination of the career development concerns and behaviours of adults.

The major purposes of this study are to evaluate the effectiveness of the two programs and to investigate alternative approaches to measuring career development in adults.

II. Review of the Literature

Relevant areas of previous research and theory-building include career development theory, program evaluation, and evaluations of career development programs. The theoretical bases of the programs provide an opportunity for testing the tenets of the theories. Program evaluation principles should provide conceptual structure for the evaluation, and previous attempts at career program evaluations indicate the current state of the art.

A. Career Development Theory

The first major attempt to develop a theory of vocational or career development (these terms have been used interchangeably) was that of Ginzberg, Ginsburg, Axelrad, and Herma (1951). Their bibliography includes works by such developmentalists as Charlotte Buehler, Jean Piaget, and Eduard Spranger. Donald Super, who has perhaps done more than any other individual to promote the concept of career development, also points to Buehler as a major source of his formulation (Super, 1957). His definition of vocational development (Super, Crites, Hummel, Moser, Overstreet, & Warnath, 1957) states:

> The term *vocational development* is used to denote the process of growth and learning which underlies the sequence of vocational behavior. It thus includes the more common concept of occupational choice, but avoids the pitfalls of suggesting that

> choosing an occupation is an event occuring at a point in time. It includes also the concept of vocational adjustment, but by comprehending both of these concepts it avoids the misleading implication that they are separate and distinct. The developmental nature of vocational orientation, choice, entry, adjustment, and retirement calls for a broad term which puts the emphasis on process over a period of time. (p. vii)

Pietrofesa and Splete (1975) emphasize the life-span nature of career development in their definition:

> Career development is an ongoing process that occurs over the lifespan and includes home, school, and community experiences related to an individual's self-concept and its implementation in life style as one lives life and makes a living. (p. 4)

They also quote seven points made in a joint position paper of the National Vocational Guidance Association and American Vocational Association. The paper, titled "Career Development and Career Guidance," explicitly places career development as part of total life development. The points, which apply to all areas of human development including career development, can be summarized as follows:

1. Development occurs through an individual's lifetime, can be described in maturational terms as a succession of life stages and the mastery of developmental tasks, and likely cannot be substantially shortened by

intervention.

2. Individual development is influenced by genetic, psychological, sociological, educational, political, economic, and physical factors, and can be influenced by appropriate intervention strategies focusing on these factors.
3. Development is continuous, and can best be aided through continuing, long-term interventions.
4. Certain aspects of the continuous process are dominant at different periods in the life span, and intervention should take the dominant aspects into account at each stage.
5. Individual development involves a progressive differentiation and integration of the person's self and the perceived world. Interventions ideally will aid normal maturation in appropriate stages as well as providing remedial assistance to those with damaged development.
6. Although common developmental stages can be observed, individual differences in progressing through these stages can be expected. Atypical rates cannot be assumed to be "wrong."
7. Excessive deprivation in any aspect of human development can retard optimal development in other areas, and optimal development programs are comprehensive in nature, not limited to any single facet.

Borow (1961) is another writer who emphasizes the close relationship between human development and career development:

> Contributions from developmental psychology have frequently been used to attempt to synthesize a more nearly complete account of man's evolving intrapsychic and interpersonal behavior, that is, his emergent behavior in a world of emotions and feeling and in a world of people. But man also lives in a world of constructive labor. It is possible, then, to view human development and the quest for maturity through a vocational prism. This is essentially what the writer takes to be the central concern of career development research--a search for the psychological meaning of vocationally relevant acts (including the exploratory vocational behavior of youth) and of work itself in the human experience. It is surprising how little developmental psychologists have had to say on this theme. (p. 23)

Career development theory arose from the practice of vocational guidance. For many years, before Ginzberg et al (1951), vocational guidance focused on occupational choice, using a trait-and-factor model, and was a cousin of counselling psychology. The normal population in adolescence and early adulthood was the target group. Neither earlier nor later ages were considered important.

Development of Career Development Theory

Ginzberg and his associates (Ginzberg et al, 1951) made the first significant attempt to formulate a developmental theory of careers. The group consisted of an economist, a psychiatrist, a sociologist, and a psychologist. They concluded that occupational choice is a developmental process comprising a series of decisions over a period of years, each step meaningfully related to the preceding steps. They conceived of the process as irreversible, in that each decision places limits on later decisions, and as ending in a compromise balancing interests, aptitudes, and opportunities.

The process was seen as having three periods: fantasy (birth to age 11), tentative (11 to 17), and realistic (17 to early 20s). The latter two are further divided into stages. The tentative period begins with the interest stage, when occupational decisions are approached in terms of what the child likes to do. During the capacity stage, the question becomes, "What am I suited for?" The value stage follows, in which adolescents attempt to resolve incompatibilities in interests and aptitudes by establishing some kind of order among them. The final stage in the tentative period is the transition stage, marked by a general calming and an increasing awareness of reality factors.

The first stage in the reality period, called "exploration," is an attempt to link decisions to reality

through testing of interests, aptitudes, and values with different kinds of experiences. Characteristic of the following stage, crystallization, is acceptance of and commitment to a vocational objective. The final stage, specification, is a refining of the decision reached in the crystallization stage.

Noteworthy features of the theory are the limited age range focused on, the emphasis on the limiting influence of earlier decisions on later ones, and the division of development into age-linked stages. Career development is clearly seen as very similar to physical development. No organizing of type of influences in the fantasy phase and their affect on actual choice of specific careers is offered.

Twenty years later, Ginzberg (1972) reevaluated the theory and greatly modified it. He no longer believes the the process to be irreversible and closed by the mid-twenties, but rather it is a life-long process, with continuing potential for redirection. The idea of compromise was replaced with the concept of optimization of the match of the changing individual and circumstances; a continuous process, rather than a terminal one.

Anne Roe

Anne Roe (1957) applied personality theory to career development and produced a multidimensional classification system which attempted to predict area of career choice from child-rearing practices. She identified parental attitudes

towards the child in three types: emotional concentration on the child (either overprotecting or overdemanding), avoidance of the child (either rejecting or neglecting), and acceptance of the child (either casual or loving). These conditions of emotional climate were posited to lead to orientations toward persons or not toward persons, and defensive or not defensive, leading in turn to occupational choice in one of eight categories of occupations (service, business contact, organizations, technology, outdoor, science, general culture, and arts and entertainment). These categories are each divided into six levels (from unskilled to professional and managerial). For example, a child coming from a climate of overdemanding emotional concentration on the child would be defensively oriented towards persons and would choose an occupation in the general culture group, whereas a child with a background of rejecting avoidance would be defensively oriented not towards persons and choose a science occupation.

Unfortunately, research testing the effects of family emotional climate within the context of Roe's theory has generally not been supportive (Herr & Cramer, 1979). The occupational classification by area and level has found more support and application.

Research into Roe's approach has seen somewhat of a revival since the late 1970s. Typical of designs is that of Medvene and Shueman (1978), who found that among 340 engineering students, the modal parental classification was

"avoiding," but students within engineering concentrating on sales and technology (person-oriented occupations) were more likely to describe their dominant parent as "accepting," compared to students in non-person-oriented areas. Studies have generally looked at single occupational groups and taken retrospective measures.

Donald Super

The only career development theory which has so far been examined by longitudinal research designs is that of Donald Super (Super, 1957). Super's theory has been very influential and has "received the most continuous attention, stimulated the most research, influenced the most pervasively the field of vocational psychology, and is the most comprehensive" (Herr & Cramer, 1979, p. 92). The theory was formulated in response to that of Ginzberg et al (1951). Super (1953) claimed the earlier theory did not take into account previous research, did not describe choice operationally, and distinguished between choice and adjustment in an unacceptable fashion. The definition of vocational development quoted earlier from Super et al (1957) takes particular aim at the last point.

In the nearly three decades since his first statement, Super's theory has undergone continuous revision (Super, 1953, 1957, 1969, 1980) and thus cannot be as easily summarized as some other theories. However, the names of his five life stages, borrowed from Buehler, have remained unchanged. These are Growth (birth to 14 years), Exploration

(15 to 24), Establishment (25 to 44), Maintenance (44 to 64), and Decline (65+). Super's latest statement (Super, 1980) attempts a broader view incorporating several other dimensions and areas of life.

Super's original statement (Super, 1953) was presented as ten propositions, and he has remained close to these in his later refinements. The points can be summarized as follows:

1. "People differ in their abilities, interests, and personalities."
2. Each person is qualified for a number of occupations.
3. Each occupation has a characteristic pattern of abilities, interests, and personality traits, but with sufficient tolerance to allow choice of occupations and variety of persons within occupations.
4. Vocational preferences and skills, individual circumstances, and hence self-concepts change with time and experience, making the choice and adjustment process continuous.
5. The process goes through the stages of Growth, Exploration, Establishment, Maintenance, and Decline.
6. Career patterns (occupational level, sequence, frequency, duration, and commitment) are determined by socioeconomic status, aptitudes, personality, and opportunity.
7. Development can be guided by aiding maturation of aptitudes and interests, testing of reality, and

development of the self-concept.

8. "The process of vocational development is essentially that of developing and implementing a self-concept."
9. The process of compromise is one of trying out alternative roles.
10. Satisfactions in work and life depend on finding and becoming established in a congenial and appropriate role.

Super also identified developmental tasks for each stage. Those for the Growth stage are developing a self-concept, and developing an orientation toward and understanding of the world of work. The tasks of the Exploration stage are crystallizing, specifying, and implementing a vocational preference. For the Establishment phase, the tasks are consolidation and advancement; for the Maintenance stage, preservation of gains; for the Decline stage, deceleration, disengagement, and retirement.

Super (1969) identified the core features of his theory:

> The postulate that, in expressing a vocational preference, a person puts into occupational terminology his ideas of the kind of person he is, that, in entering an occupation, he seeks to implement his self-concept, and that, in stabilizing in an occupation, he attempts to achieve self-actualization, together with life-stage theory, has provided the framework not only for a large part

> of my *Psychology of Careers*, but also for my more recent theorizing and research. (p. 7)

In the same article, Super made some important and revealing distinctions between a psychology of occupations, derived from differential psychology through a trait and factor approach, and a psychology of careers, derived from developmental psychology through vocational development theory; and between an occupational model, which attempts to predict a choice of occupation at one future point in time from variables at an earlier point in time, and a career model, which examines sequences of occupations and pathways through the educational and work systems. He defined a career as a sequence of occupations, jobs, and positions occupied through the course of a person's working life, including pre- and post-vocational positions.

The Career Pattern Study (Super et al, 1957; Super & Overstreet, 1960; Jordaan & Heyde, 1979), under Super's leadership, and the Career Development Study, by Gribbons and Lohnes (1968), have tested Super's theory with longitudinal designs. The Career Pattern Study began in 1951 with a sample of 105 ninth grade boys. Data has been very slow in reaching publication as comprehensive reports, with nine years passing before the data on the first year was published in book form (Super & Overstreet, 1960), and a total of 28 years before a comparison of the ninth and twelfth grade data was issued (Jordaan & Heyde, 1979). It could be argued that social, economic, political, and

industrial change since 1951 makes the data nearly irrelevant in dealing with current ninth grade students, who could be the children of the original subjects. This problem is intrinsic in long-term longitudinal research, but is exacerbated by slow analysis and reporting. The results, however, have generally supported Super's ideas, and led to some revisions.

The Career Development Study (Gribbons & Lohnes, 1968) was developed with Super's advice, and began in 1958 with a sample of 111 eighth grade boys and girls, who were followed for a further seven years. Data was gathered from interviews, modified from the structured interviews used in the Career Pattern Study. Super, in his introduction to *Emerging Careers* (Gribbons & Lohnes, 1968), refers to the study as a replication of his Career Pattern Study. Results were generally as the theory predicted, with group gains in vocational maturity and maintenance of individual differences over time. Sex differences were not significant. One puzzling result was that two twelfth grade variables, Roe level and SES of occupational choices, could be better predicted from eighth grade than from tenth grade vocational maturity scores. Perhaps the timing of achievement of maturity has lasting effects on these variables. Although the reported data do not allow the testing of the possibility, it may be that students of higher SES both mature earlier vocationally and tend to choose higher SES occupations, and in the tenth grade this relationship is

obscured by a closing of the maturity gap by the lower SES students. This interpretation is consistent with what is known about SES and occupational choice.

Murphy and Burck (1976) have proposed the addition of another lifestage, to be called Renewal, between Establishment and Maintenance. The suggestion is based on a review of research into male mid-life changes, which suggested that these changes meet the criteria for a developmental stage. There exist common, major external events during this period which lead to permanent change in the lives of individuals. The age period for the Renewal stage would be 35 to 45, and it would be characterized by a reevaluation of the self-concept leading to a readjustment in one's career or life goals. Super's response to this proposal is not known.

Tiedeman and O'Hara

Closely related to Super's work is that of Tiedeman and O'Hara (1963). They focus on the decision-making aspects of career development, dividing decision-making into two periods: anticipation, subdivided into exploration, crystallization, and choice; and implementation and adjustment, subdivided into induction, reformation, and integration. If integration is successfully achieved, the process is suspended until circumstances end the integration. Otherwise, a process of reciprocity between self-concept and environment leads to a cycling back to a new period of anticipation.

John Holland

John Holland's theory of careers (Holland, 1973), although primarily in the differential psychology area, has developmental implications. Holland posits six main types of personality and six corresponding types of work environments. Vocational choice is the process by which a person seeks to find the appropriate environment for his type. From a developmental point of view, Holland's explicit assumption that environments to some extent form types is significant, but has been little researched. Dewinne, Overton, and Schneider (1978) found a significant relationship between Holland type of mother's or father's occupation and the Holland types of entering male freshmen at a state university. Taking a different perspective, Hasanowitz investigated the relationship of Holland type in individuals with identification of males or females with parents of the same or opposite sex, or with both parents (personal communication).

Miller and Form

Working from the viewpoint of industrial sociology, Miller and Form (1964) proposed five periods of the lifework pattern: preparatory, initial, trial, stable, and retirement. These can be identified, but not precisely, with Super's stages. The preparatory period seems to involve Growth and part of Exploration, in Super's terms, while the initial phase is the last part of Exploration. Super's Decline stage also begins somewhat earlier than the

retirement period of Miller and Form. Miller and Form (1980) have elaborated on their earlier formulation by adding six types of career orientations, and consideration of job mobility and security.

Douglas Hall

Focused on the developmental process after worklife begins is the model of subidentity development proposed by Douglas Hall (1971). According to Hall, career development has received little attention in the literature when compared with occupational choice, career transitions, intracareer role analysis, and intercareer role analysis.

Hall borrowed the concept of subidentity from Daniel Miller. A subidentity is "that aspect of the total identity which is engaged when a person is behaving in a given role" and, since it goes beyond the minimum requirements of the role, is unique to the individual. Career subidentity is defined as the aspect of a person's identity engaged when working in a given career area. Career role is his/her perceptions of the behaviors and attributes which are associated with his career work, and career adjustment is the degree of congruence between career role and career subidentity. Further, career satisfaction depends on the extent to which the person values this career adjustment. Occupational choice is seen as selection of a subidentity for expression. Career growth in Hall's context is seen as subidentity expansion in the context of a career role, involving creation of new aspects of self. Career commitment

is the strength of one's motivation to work in a chosen career role.

Career development, in Hall's context, is therefore defined as a spiraling (increasing or decreasing) combination of career choice, subidentity growth, and commitment. Career choice, in contrast to occupational choice which occurs only two or three times in a life, is any choice which will affect career development, and can occur continuously.

Hall, working from the basic assumption that an individual strives to increase his/her sense of self-esteem, has derived a model of career development based on ten propositions. The model is that a choice of a challenging goal leads to independent effort, leading to goal attainment, resulting in psychological success and increased self-esteem, which leads to a more competent identity. The propositions expanding on the operation of this model can be summarized as follows:

1. The higher a person's self-esteem, the more extensive his search for information about available career roles and about "his value for his perceived potential competence in his various subidentities."
2. The more the individual searches for this information, the more aware he is likely to be about these roles and subidentities.
3. The more aware the the individual is of these entities, the closer the match will be between the selected career

subidentity and career role.

4. Thus, the higher the self-esteem, the greater the congruence of career subidentity and career role.
5. The higher the person's self-esteem, the greater the likelihood that he would risk committing himself to a career role challenging a valued subidentity.
6. The higher the self-esteem is, the more demanding the chosen career role will be.
7. Over time the career subidentity grows as additional career-relevant dimensions are incorporated into the identity and as the personal sense of competence increases.
8. Over time the congruence of career subidentity and perceived career role increases.
9. "Increases in career subidentity, career commitment, self-esteem, and probability of future career goal-setting will result from success in attaining a goal which satisfies the following criteria:
    a. the goal was set by the person,
    b. the path to the goal was defined by the person,
    c. the goal was perceived as challenging or difficult but attainable,
    d. the goal was central to his self-identity, and
    e. the goal was perceived as being relevant to the career goal."
10. The extent to which a person's initial job assignment provides the challenge and autonomy required for

psychosocial success will be positively related to career commitment, performance, and success in the future.

Hall's model fills in a gap in other theories by showing how career development can operate even when no occupational change is taking place.

Knefelkamp and Slepitza

Another developmental approach that adds detail to career development in a narrow time span is the cognitive development approach of Knefelkamp and Slepitza (1978), based on the scheme of cognitive development in college students advanced by William G. Perry, Jr. Knefelkamp and Slepitza state that college students progress through four levels of cognitive development by evolving on nine variables. The levels, in ascending order, are labelled dualism, multiplicity, relativism, and commitment within relativism, and represent a progression from simplistic, dichotomous thinking to acceptance of personal responsibility for career decisions. The nine variables showing qualitative change as students progress are locus of control, analysis, synthesis, semantic structure, self-processing, openness to alternative perspectives, ability to assume responsibility, ability to take on new roles, and ability to take risks with self. Nine stages taking students through the four levels of cognitive complexity have been identified:

1. The student has absolute reliance on external

authorities for career decisions.

2. The possibility of right/wrong career decisions is beginning to be recognized, causing anxiety and dissonance. The authority of the counsellor is somewhat more tentatively accepted.
3. Students realize a greater possibility of error in career decisions and recognize a greater complexity in career decision-making. They are ready to become analytical. Authority is invested in the process.
4. The decision-making process becomes a complex weighing of factors with the hope that the right career can be found. The student does not yet accept full authority for choosing, and the role of the counsellor is seen as helping the student set priorities.
5. This exploring-doing stage begins with a recognition of multiple possibilities and ends with the need to create personal order in and clarification of the decision-making process.
6. The student begins to experience alternatives as chaotic rather than freeing in their multiplicity. The student sees the need to choose but is not ready to make a commitment. Careers are still defined in terms of traditional roles.
7. Students experience the integration of self and career role, and a realization that the individual defines the role.
8. The individual feels the consequences of the

realizations of stage 7, and is challenged to clarify values, purposes, and identity.

9. Individuals at this stage have a firm knowledge of self and the effect of that knowledge on all aspects of life. They are aware of how they affect others and how others affect them, and are characterized by an active seeking out and processing of environmental information, taking on more risks to their self-esteem in order to realize their potential.

There are obvious parallels between Hall's conception of the role of self-concept and self-esteem in career development within a career, and Knefelkamp's and Slepitza's ideas about the role of self-concept and self-esteem in the process of choosing a career. However, Hall sees a spiraling development resulting from success or failure in goal attainment, while Knefelkamp and Slepitza see an irreversible process of growth. A synthesis of the two approaches examining the effects of levels of cognitive development on achievement and satisfaction within an occupation would likely lead to a prediction of a positive relationship between career growth and stage of cognitive development.

Approaches to Synthesis

Havighurst

Attempts at synthesis of career and other developmental theories have not been completely absent. Havighurst (1952)

included several career development tasks among the developmental tasks he identified for different age groups. For example, two of ten tasks of adolescence are achieving assurance of economic independence, and selecting and preparing for an occupation. One task of eight of early adulthood is getting started in an occupation. In a later paper, Havighurst (1964) dealt specifically with career development and made some points that only recently (Super, 1980) have been recognized by career development theorists. He distinguished between "ego-involving" jobs and "society-maintaining" jobs. The first kind seems to be the model on which most career development theories are based. These ego-involving jobs are the organizing force in a person's life. They clearly suit Super's idea of the implementation of the self-concept, Holland's assumption of the expression of personality through vocational choice, and Hall's, and Knefelkamp's and Slepitza's, goal of the integration of career role and identity. The society maintaining job, on the other hand, may satisfy the ego and help achievement of an identity, but is not a central organizing force. The job gives satisfaction through association with co-workers and by providing a tolerable routine for passing the time.

Wasserman (1974) found evidence of the effect of these two types of attitudes toward the centrality of work when he investigated the relationship between Holland's theory and the homemaker-career orientation dimension in twelfth grade

girls. Holland's conceptions of the expression of personality through stated vocational preference were supported in the case of the career-oriented subjects, who said that a career would be an important source of satisfaction to them, but not supported for the homemaker-oriented sample, who said that the home and family would be the most important source of satisfaction.

Havighurst (1964) also identified a third group, the alienated. He stated that a given job could be ego-involving or society-maintaining, depending on the attitude of the individual, so that the classification is one of attitudes rather than of jobs, but certain types of jobs were more likely to be related to particular attitudes. He estimated the distribution of the types to be 50% society-maintainers, 35% ego-involved, and 15% alienated. By this standard, theories of careers that depend on ego-involvement with the chosen occupation would be valid for only about a third of the population. Havighurst tempers his figures with this statement:

> Any job is ego-involving to some degree to whoever holds it. A person who is himself work oriented and who wants to serve society as well as himself through his work will be ego-involved to some extent in his job, whatever it is. However, he may shift jobs and look for new ones until he finds something that is even more ego-involving to him. (p. 234)

Super and the Life-Career Rainbow

Super's latest statement (1980) attempts a synthesis of career development and other psychosocial development, showing a recognition of the varying importance of the career role in the self-concept of individuals. He redefines "career" as "the combination and sequence of roles played by a person during the course of a lifetime." The major roles are child, student, leisurite, citizen, worker, spouse, homemaker, parent, and pensioner. Some less common roles are criminal, reformer, and lover. No longer is career restricted to work roles. The nine major roles are played in a "life space" of four principal theatres: the home, the community, the school, and the workplace. Not every role nor every theatre may be used by everyone, but the major roles and principal theatres are common to most lives. The order given to the roles and the theatres is the order in which they are usually first occupied. Each role is typically played in one theatre.

Roles in Super's model are defined by expectations (of the player and observer) and performance (with enactment, and with shaping by the actor). "It is in *role shaping*, as well as in the *choice* of positions and roles, that the individual acts as the synthesizer of personal and situational role determinants" (p. 285).

Within this context, the combination of simultaneous life roles makes up the lifestyle, and their sequence structures the life space and constitutes the life cycle.

The total structure is the "career pattern." According to Super, work roles give life structure and meaning by establishing a regular schedule, providing associates, supplying social solidarity and support, and often containing content of intrinsic interest. The same is true, but usually to a lesser extent, of other roles in other theatres, such as the homemaker role in the home.

Super's intent in creating this perspective is to create a context for studying career patterns as shown by the waxing and waning of roles through the life cycle. He says role importance at the various life stages (which he has retained from his original formulation) can be operationally defined in terms of time and in terms of emotion. The time dimension is simply a function of the amount of time required to play a role, including formal and informal requirements. Emotional importance is a function of the psychological involvement in a role. It is with this construct that Super has explicitly admitted that work is not central to the self-concept of everyone at all times. Super's concept of role seems to combine Hall's (1971) idea of subidentities with what Hall calls roles. A distinction such as Hall makes would clarify Super's model.

Super also deals with decision points as existing within roles and occuring at typical times within each role: when a new role is being adopted, an existing one changed, or an old one given up. Decision-making at each decision point is seen as running through the life stages in

miniature: each decision process has the stages of Growth, Exploration, Establishment, Maintenance, and Decline.

Super's model also deals with determinants of decisions, classifying them as either personal or situational and either immediate or remote. For example, biological heritage is a remote personal determinant; employment and family are immediate situational determinants.

All these factors are displayed graphically in Super's article, in his Life-Career Rainbow. He suggests this "rainbow" can be used to teach the concept of life-career, helping people see the interactive nature of the various roles and how "self-actualization can be achieved in varying combinations of life roles" (p. 296). It can also be used to help people analyze their past careers and project them into the future.

As the preceding summary has indicated, a lot of thought has been given by a great many people to various aspects of career development. Most, including Ginzberg et al, Super, and Miller and Form, have sought to describe stages in the career development process. Others, such as Roe and Holland, have given some thought to the different developmental experiences that lead to particular career choices. Still others, like Tiedeman and O'Hara or Knefelkamp and Slepitza, have looked at career decision-making as a developmental process. Hall's contribution is a model for the processes of development

within jobs. More recently, some have attempted to place career development within the context of general human development. Super's latest work is in this category.

Valiant though these efforts have been, their flaws are numerous, and often common to several of the approaches. Most of the writers classify their work as exploratory, or a first step. They usually deny that what they have done is worthy of the status of a theory, although other writers attach this label nonetheless. The most glaring problem is the lack of research to test the propositions that have been set out. Related to this problem is the fact that the theories or models tend to be descriptive and general, sometimes making derivation of specific testable hypotheses difficult. The necessity of longitudinal or cross-sequential designs (as suggested by Crites, 1974) and the expense of these designs has greatly restricted research activity. A lack of accepted standard measures for the various constructs has been a great hindrance. Another flaw is that most of the theories have made no attempt to distinguish between the sexes in career development, or to explore the possibility of sex-differentiated developmental patterns. The general assumption that work is central to everyone's life is related to the question of sex differences. This assumption is shaky at best, but seems to underlie all the theories and models, with the possible exception of those integrating career development with other development.

These integrative approaches seem to be the wave of the

future. Career development can best be understood in the context of the total development over the life span. Careers take a lifetime to develop, and are subject to the forces of other developmental processes. Theories that attempt to look at limited time spans and ignore the developmental context and individual differences are unlikely to reflect clearly the true nature of the career development process.

B. Program Evaluation

The term "program evaluation" requires definition. In common usage, evaluation and research are often used interchangeably. Yet many scholars make a clear distinction between the two. The distinction is made, not in terms of the activities involved, but in terms of the goals. According to Worthen and Sanders (1973), the goal of research is to produce new knowledge, while that of evaluation is to judge worth or social utility. Obviously, if the goal of a study is to produce new knowledge about the effectiveness of a particular type of activity, there will be little to distinguish an evaluation from research. There still remains a difference: research is interested in the *effects* of a *type* of activity, while evaluation is interested in the *effectiveness* of a *particular* activity. Research looks for generalizable data on any change, while evaluation looks for information on change toward a goal.

There is no reason why both points of view cannot contribute to the same study. A program which is so unusual

that no generalizations can be made to similar situations would be unusual indeed, and research often is conducted with an eye to discovering something useful. Indeed, some evaluation theorists believe that all program evaluations should be sensitive to the possibility of beneficial side-effects unrelated to the original goals of the program (Worthen & Sanders, 1973).

One problem that research and evaluation both commonly face in real-life situations is measurement of the factors of interest. A researcher often faces the problem of making a theory operational; an evaluator faces the equally thorny problem of finding adequate ways to measure achievement of program goals. As Loveland (1980) says, "The validity of any program evaluation will depend largely on the adequacy of the measurements made in its execution" (p. vii).

If a researcher finds he cannot measure what he is seeking in a sufficiently rigorous fashion, he can usually seek something else. When an evaluator faces the same problem, he must measure as best he can. For this reason, research often depends upon one good measure, while evaluation depends on many approaches of often questionable value.

The question of measurement can itself be a focus for valuable research, often within the context of an evaluation. This study attempts to achieve such a result. The measurement of career development is a question of basic interest as well as practical significance. According to

Bonnet (1979), one common pitfall in career education program evaluation has been

> poor choice of measurement instruments. The relationship between career education objectives and the content of tests or other measurement tools chosen for measuring their attainment is often obscure, usually resulting in disappointing evaluation results which are unjustly interpreted as evidence of the program's ineffectiveness. (p. 85)

Career education is a developmental activity, with long-term goals. The problems of measurement of career development and career maturity, discussed earlier from the point of view of the researcher into career development, have practical impact on the evaluation of programs intended to aid career development. The problem may not be poor choice of instruments as Bonnet suggests, but the unavailability of any adequate instruments whatsoever.

As the foregoing discussion suggests, program evaluations typically attempt to measure a broader variety of outcomes than pure research studies. Owens, Haenn and Fehrenbacher suggest the following approaches for career education evaluations:

1. Comparative testing within an experimental design
2. Graduate follow-up or longitudinal study
3. Student case studies
4. Content analysis
5. Adversary hearing

6. Cost studies
7. Ethnographic study
8. Local study committee review
9. Organizational study
10. Panel review by experts
11. Survey questionnaires

To attempt all of these is beyond the resources of the author, but several have been included in the design of this study. The first one, comparative testing within an experimental design, is the major approach used. Also involved are a follow-up or longitudinal study, although a somewhat limited one, and survey questionnaires.

C. Evaluations of Career Development Programs

The literature describing evaluations of career development programs is not extensive. Most programs for which evaluations have appeared in the literature deal with college students, who generally are not free to take immediate action for career change, as they are able to make program changes at only a few occasions without great disruption. This restriction limits the kind of measurement of program effectiveness which can be done, and most evaluations have concentrated on measuring changes in client attitudes, rather than in behaviours.

For example, Davidshofer, Thomas, and Preble (1976) used Crites' Vocational Development Inventory Attitude Scale (an earlier version of the Career Maturity Inventory) to

measure the effectiveness of three one-hour career development group sessions with 31 college students. No significant effects were found, compared to a control group. Tichenor (1977) used Shostrom's Personal Orientation Inventory to evaluate a 30-hour life work planning workshop with 76 adults and a waiting list control group of 60 adults. Significant differences were found. Bartsch and Hackett (1979) used Rotter's measure of locus of control and two non-standardized measures, one for career concepts and one for career concerns, to evaluate the effectiveness of a credit course in personal-career decision making with 64 university students, finding significant effects on all measures. Ahrens (Note 1) used the Exploration scale of the Career Development Inventory to evaluate the Creating a Career program in Ontario with several hundred young, mostly unemployed, adults, and found a significant pretest-posttest gain.

Zener and Schnuelle (1976) used questionnaires to establish satisfaction with occupational choice and numbers of alternatives being considered as measures of the effects of the Self-Directed Search (SDS) (based on Holland's theory) or Holland's Vocational Preference Inventory on a sample of high school students. They used a control group (no treatment) and a three-week follow-up, and found lasting results on their measures for the SDS group.

Atanasoff and Slaney (1980) used the Occupational Alternatives Question (Slaney, 1980) and other

questionnaires to evaluate three counsellor-free career exploration treatments (the Strong-Campbell Interest Inventory, the SDS, and the Vocational Card Sort) with a sample of college women. They found few treatment differences. A control group was included, and measures were taken after a three-week period during which the subjects were free to work on their 'treatment.'

Rubinton (1980) used both a no-treatment control and a placebo-attention control, as well as the two career decision-making treatments being evaluated. Her instruments were the Vocational Survey Questionnaire (VSQ), which categorizes students into four levels of certainty of vocational choice on the basis of the subject's selection of four alternative self-descriptive statements; the Assessment of Career Decision Making, a self-administered, self-scored, 140-item "agree-disagree" checklist; and Crites' Career Maturity Inventory (CMI). Pretests were given at the first class of the program, and posttests at the last class. The VSQ showed treatment effects, while the attitude scale of the CMI did not.

Also evaluating a career decision-making intervention with the attitude scale of the CMI were Egner and Jackson (1978). They found that it measured changes as a result of treatment when given as a pretest and immediate posttest in a sample of high school students.

A much less formal kind of evaluation was done by Heppner and Krause (1979) of their career seminar course for

university students. They used student self-evaluations, interviews, group discussions, and a written questionnaire. Similarly, Graff and Maclean (1970) used a questionnaire to evaluate the effectiveness of vocational and educational counselling at a university counselling centre. Gillingham and Lounsbury (1979) also used only a post-treatment questionnaire in their evaluation of a college career exploration course.

Evans and Rector (1978) used an evaluation questionnaire and the Vocational Decision Checklist (VDC), a 56-item checklist designed by Harren, who also designed the VSQ, to evaluate a college course in career decision-making. No control group was used, and the VDC was used as the pretest and posttest to measure changes, which were found. The questionnaire was used to gather student reactions to various features of the program.

Use was made of behavioural measures by Krivatsky and Magoon (1976), who compared three vocational counselling treatments at a college counselling centre. Comparison among groups receiving the SDS, a modified SDS called Individual Vocational Planning, traditional vocational counselling, or no treatment were made using a Vocational Checklist, on which the subjects recorded frequency and variety of vocational information-seeking behaviours. For students, such behaviours are the most available way of expressing career development. The checklist was successful in identifying changes and intergroup differences, with all

treatments being about equally effective, and superior to no treatment.

D. Summary

The review of the literature indicates that measurement of career development is a continuing problem. Career development can involve a large variety of attitudes, skills, and behaviours, and it is generally agreed that it takes time. Measurement of career development, then, is best attempted in a variety of ways. Certain outcomes other than career choice must also be considered successful, as Hall and Super point out. All the theories suggest time for results to take effect must be allowed. As Havighurst indicates, the central importance of work to all cannot be assumed. Decision-making as a process deserves attention, according to Tiedeman and O'Hara.

Such research as has been done has often concentrated on only one approach to measurement. Students are the common subject group, and longitudinal studies with them are very time-consuming, and very rare. Many researchers have attempted rigorous designs, while others have been content with more subjective approaches. No measures have found universal acceptance, and non-standardized or experimental instruments have been widely used.

III. The Programs

A. History

At the time of this study (winter and spring, 1981), the two programs being evaluated had been in use for some time. The Career Planning Workshop program was introduced in February, 1977 (Fingas, Note 2) as an adaptation of the "Creating A Career" (CAC) program developed by the Training Research and Development Station, Canada Manpower and Immigration (1974). CAC is intended for young adults, usually in a secondary or post-secondary educational institution. Since the Career Centre clients differ from the target group in age range, variability of background, and method of selection, it was felt that a modification was required. The primary goal was to minimize class time and maximize the amount of work done independently by the participants. Accordingly, the 50 hours of instruction in CAC were reduced to 27 hours, in nine three-hour blocks, delivered at one per week.

The need for an even shorter, more intensive program was identified by Career Centre staff in the fall of 1979. The one-day Occupational Choice Seminar program was designed for use with those clients who had less time available or who were more advanced in their career development. It was also seen as providing a portable service that could be provided to outlying areas in a single visit. Another need the OCS was intended to fill was as a training vehicle for

CPW instructors, counsellors, and Career Centre clerical staff, providing a quick run-through of the career-planning process.

It was felt that OCS participants would be able to learn the basics of the process and be able to apply it to their own lives in future situations.

B. Description

The content of both programs is structured through the use of instructor's manuals and prepared student materials. The materials and accompanying exercises are designed to lead participants through the stages of a career planning model in which self-knowledge is explored and organized, career alternatives are generated, information on the alternatives is gathered, a choice is made, and action to reach the goal is planned. This model is derived from Bergland (1974).

Career Planning Workshop

Materials used in the Career Planning Workshop are the *Instructor's Manual*, *Student's Workbook* (Appendix A), and the *Career Planning Guide* (Davison & Tippett, 1976). The first six sessions emphasize the gathering and organizing of self-knowledge through such activities as the General Aptitude Test Battery (GATB), checklists, and group discussions. Participants examine their past educational and vocational experiences and clarify their perceptions of their abilities, interests, and goals. They are also

introduced to a decision-making model, and given practice in its use.

The self-knowledge activities are all developed within the framework of the occupational descriptions used in the *Canadian Classification and Dictionary of Occupations* (CCDO) (Manpower and Immigration, 1971). The CCDO contains profiles of nearly 7 000 occupations. Each profile contains information on occupational requirements for aptitudes, interests, temperaments, general educational development, specific vocational preparation, environmental conditions, physical activities, and relationships to data, people, and things. Participants create profiles of themselves on the same dimensions, using the CCDO terminology. They are also required to decide which dimension or dimensions are the most important to their own career choices.

The seventh session involves generating alternative career choices through the use of the occupational keysort, which allows users to identify occupational clusters matching criteria on any of the CCDO dimensions. For example, a keysort user could pick out clusters involving interests 1 and 3, and temperament 7, discarding those requiring physical activity 5 and high levels of spatial aptitude. At each step, participants are encouraged to examine the clusters eliminated by a certain factor, so that they can see the effect of requiring particular characteristics in an occupation. Participants continue with the keysort until they are satisfied with the list of

alternative clusters.

The final two sessions involve the use of the Career Centre library and other information sources to gather further information about the alternatives that have been identified. The Keysort and CCDO provide no information on such factors as availability of training and employment and rates of pay. Career Centre information files, organized by CCDO code numbers, provide access to the information and to more detailed occupational descriptions. At the final session, participants try to make a final decision, and are introduced to action planning.

Occupational Choice Seminar

The Occupational Choice Seminar program follows the same model, but with a shift in emphasis. The self-knowledge portion of the process is dealt with through a personal inventory checklist, which the participants complete before coming to the seminar. Whereas Career Planning Workshop participants receive actual GATB aptitude scores, OCS participants must estimate their aptitudes. After reviewing these checklists, explaining the model, and introducing the CCDO system, the instructor proceeds to the keysort phase and the participants generate alternatives. Following this, they use the Centre library to gather more information. The decision-making and action-planning portions of the process are outlined, but not dealt with at length.

C. Evaluation Questions

The central question is whether the programs have any effect on the career development of the participants. Closely related questions are whether the effect, if any, is more clearly indicated by attitudinal or behavioural measures, and which instruments function best in this context.

Another question is whether changes due to programs can be measured immediately after program completion or if these changes take form over a period of time during which learning is internalized and transformed into action.

Questions of formative importance include possible differences in the groups on demographic variables such as age, sex, and educational level. Program effectiveness may vary with client background. Participants may be selecting the programs appropriately or inappropriately.

Program effectiveness as perceived by participants may shed useful light on how the program components are seen by clients. Client satisfaction is an important program goal, particularly since word of mouth referral by acquaintances is a major source of the Career Centre clientele.

The multi-session Career Planning Workshops have the possibility of participant withdrawal, unlike the single-session Occupational Choice Seminars. Whether the drop-outs can be predicted from demographic characteristics and from measures of pre-program career development is a question with important implications for client selection

procedures and program revision or development.

If analysis of the measures and of overall program effectiveness shows that a criterion can be established by which some participants can be classified as successful and others as unsuccessful, an analysis of demographic differences and pre-program career development scores may similarly provide data for decisions on selection procedures.

The usefulness of instructor evaluations of client benefit can be tested by comparing instructor judgments with client judgments and with the results of other measures of career development.

The possibility that program effectiveness is related to how highly the client rates work as a source of life satisfaction can also be investigated, with implications for theories and programs that assume the centrality of work to satisfaction.

A major difference between the two programs is that aptitudes are actually measured in the longer program, while they are estimated in the shorter program. Whether estimates are as accurate as actual measurements is a significant question in comparing the two programs.

IV. Method

The research can be characterized as an evaluation which includes as one of its components a quasi-experimental study. The design of the quasi-experiment uses two intact treatment groups and a non-equivalent comparison group. Premeasures and postmeasures were taken on all groups.

The objectives of the evaluation were to determine the effectiveness of the Career Planning Workshop and the Occupational Choice Seminar, both in an absolute sense and relative to each other; to determine the characteristics on some relevant dimensions of the clientele of the program; to determine the relationship of these characteristics to program effectiveness; and to provide information that will be useful in modifying these programs or the intake to the programs in order to increase effectiveness. The evaluation is formative in focus.

The objectives of the quasi-experimental study component were to determine the effectiveness of the programs, to examine the relative utility of behavioural and attitudinal approaches in measuring career development in adults, and to find out if further changes occur in career development attitudes and behaviours in the three months following program completion.

A. Design of the Quasi-experimental Study

Subjects

The treatment group subjects were those people who choose to attend CPWs and OCSs from the beginning of the study until total samples of 103 CPW and 50 OCS participants were reached. The comparison group subjects (no treatment) were 31 volunteers from among persons who sent coupons in response to a Career Centre advertising campaign in early November, 1980, but did not come to the Career Centre. All respondents were sent form letters inviting them to register in orientation sessions at the Centre. More than 500 coupons were received in Edmonton.

Instruments

Four instruments were the primary data source for this part of the study:

1. Career Development Inventory (Adult Form I) (CDI)
2. Career Development Behaviours Checklist (CDB Checklist)
3. Occupational Alternatives Question (OAQ)
4. Career Needs Survey

The CDI Adult Form I (Appendix B) was first developed for pilot use in 1975 by Super, Zelkowitz, and Thompson. It has not yet been commercially produced for distribution, and norms have not been published. The CDI Adult Form, like the other forms of the CDI, is based on Super's life-stage theory of career development. It gives scores in each of the substages of the Exploration, Establishment, Maintenance, and Decline life stages. Both "life stage" and "concern"

scores are calculated. For the purposes of this study, only the first two stages are likely to be relevant to the subjects, so only the first sixty items, which measure those stages, were used, giving a 50% reduction in administration time. For each subject, 16 scores were produced. Four of these, the Exploration life stage, Exploration concern, Establishment life stage, and Establishment concern scores, are totals of the three substage scores in each category. The Exploration substages are Crystallization, Specification, and Implementation; the Establishment substages are Stabilization, Consolidation and Advancement.

The CDI Adult Form I Preliminary Manual (Super, Zelkowitz, & Thompson, 1975) supports the use of abbreviated versions when the focus of the study, age of the subjects, and time available for administration make it advisable.

The Career Development Behaviours Checklist (CDB Checklist) (Appendix C) has been developed by the author along the lines suggested by Super and Kidd (1979). A list of behaviours which could demonstrate implementation of a career decision, either through further education, changing employment, job enrichment, or extraoccupational adjustment, was developed through consultation with several experienced career counsellors. The resulting 31 items were then scaled by a larger sample of career counsellors (N = 17) employed by the Alberta Career Centres, using the Law of Categorical Judgment (Torgerson, 1958). The scaling questionnaire is attached in Appendix D. The resulting values were rescaled

so that the estimated midpoint of the lowest category, labelled "no career development," was at zero. Point values were thus attached to each item that can be treated as additive. (See Figure 1.) If the purpose of the workshops can be conceptualized in terms of Super's model as helping the subject move successfully from the Exploration stage into the Establishment stage, then the checklist score should represent activities in the final (Implementation) substage of the Exploration stage. Scores on the checklist can be interpreted as showing the amount of Implementation behaviour that took place in the preceding three months, as subjects are requested to restrict responses to behaviours occuring in that time span.

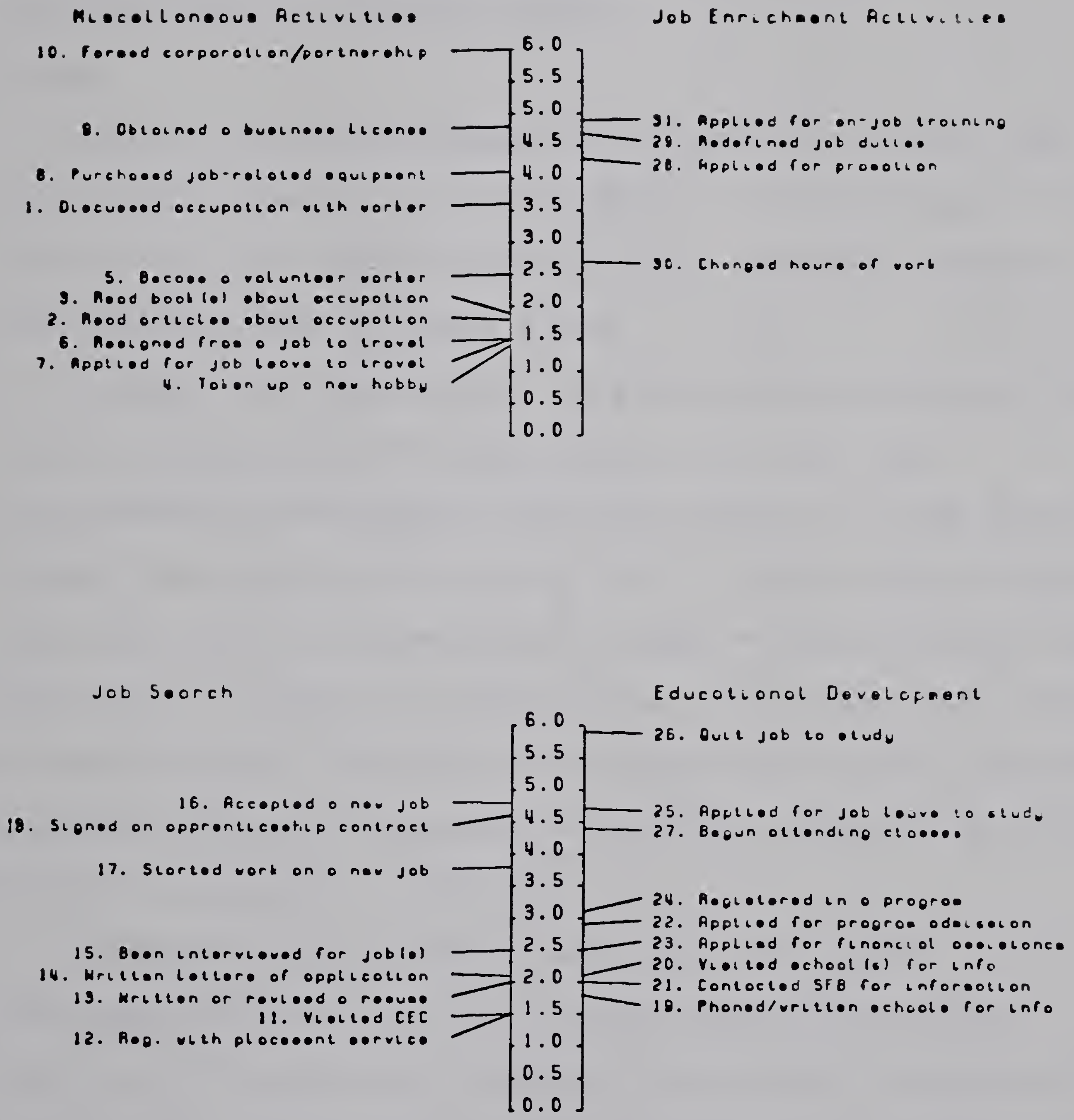
The Occupational Alternatives Question (Appendix E) has been established as a measure of vocational decision-making (Slaney, 1980). Subjects are placed in four groups depending on their responses. The most decided are those who list only one career that they are considering, which is also their first choice. Next are those with several alternatives and a first choice, then those with several alternatives and no first choice, and finally those with neither alternatives nor a first choice. The OAQ was also scored for number of alternatives.

In Super's model, the OAQ can be taken to represent a measure of whether the subject has successfully dealt with the Specification substage of the Exploration stage.

The Career Needs survey is a list of twelve possible

Figure 1

Scaled Values For CDBC Items



career development needs for which the Career Centre offers services. It is part of the intake information form (Appendix F) completed by all clients. (The intake form was designed and developed by the author.) Subjects were asked to indicate which statements were true for them. The survey was repeated in the follow-up questionnaire. The score is the total number of needs checked.

Design

Career Planning Workshop participants were given the CDI, the CDB Checklist, and the OAQ at the beginning of the first class, the end of the last class, and approximately three months after the last class.

Occupational Choice Seminar participants were given the three instruments at the beginning of the day, and approximately three months after the seminar. At the end of the day they completed only the OAQ. It seems very unlikely that CDB Checklist scores could change in the course of one day, and CDI scores are likely to be stable over that period of time as well. The limited time available for the one-day workshop made use of the CDI, which takes subjects up to 20 minutes to complete, inadvisable.

Comparison group members were sent the three instruments by mail, and sent another set three months later. A self-addressed, stamped, envelope was included with the mailings, and telephone follow-up was used to encourage response.

CPW and OCS participants completed the needs survey at

the time when they first came to the Career Centre. The comparison group filled out the intake form along with the other pre-test instruments. All three groups were given the needs survey as part of the follow-up questionnaire.

B. Hypotheses for the Quasi-experimental Study

The hypotheses tested as part of the quasi-experimental study and the analytic techniques used are the following:

Hypothesis 1: There is no difference due to treatment on measures of career development among the treatment groups.

Analysis: One-way multivariate analysis of variance or covariance with Career Development Inventory Exploration and Establishment Lifestage and Concern scores, Career Development Behaviours Checklist total and weighted total scores, Career Needs Survey scores, and Occupational Alternatives Question level and number of alternatives scores, on the follow-up measurement, as dependent variables, treatment group as independent variable, and the pretest scores on the dependent variables as covariates if required.

The multivariate test of significance indicates whether there is a treatment effect as measured by these instruments. Univariate tests can be studied to indicate which measures are the most effective in measuring the treatment effect.

Hypothesis 2: There is no change in career development in

the time between program completion and the follow-up measure, three months later.

Analysis: Correlated t-tests between post-test and follow-up scores on Career Development Inventory Exploration and Establishment Lifestage and Concern scales, Career Development Behaviours Checklist total and weighted total for CPW participants, and Occupational Alternatives Question level and number of alternatives for OCS and CPW participants.

If the null hypothesis is rejected for any or all of the t-tests, it will indicate that changes take place in career development that are not measureable at treatment conclusion.

C. Other Elements of the Evaluation

Information to answer other evaluation questions not included in the quasi-experimental study was gathered by several instruments:

1. Alberta Career Centre Intake Information Form
2. Evaluation Questionnaire
3. Follow-up Questionnaire
4. Instructor's Evaluation Form

The Alberta Career Centre Intake Information Form (Appendix F) is completed by all clients at their first visit to the Centre. This form was designed and developed by the author for the Career Centre so that an information system could be established. Clients record such data as

their birthdate, address, sex, work background and status, and educational level, and complete the Career Needs Survey.

The Evaluation Questionnaire (Appendix G) was designed by the author to measure client perceptions of how helpful various goals of the program, and the program as a whole, were to them, using a seven-point Likert-type scale. Program goals were identified from the career planning model shared by the programs.

The Follow-up Questionnaire (Appendix H) was designed by the author to measure client perceptions of the program and their career development, their current needs, and the importance of work to their life satisfaction. The comparison group's questionnaire omitted the question referring to program satisfaction.

The Instructor's Evaluation Form (Appendix I) required the instructor to rate how much each client had benefited from the program at program completion, using a seven-point Likert-type scale. The purpose of this instrument was to investigate the relationships among instructor perception of program helpfulness, client perception of program helpfulness, and the less subjective measures of career development.

OCS participants estimate their aptitudes in order to use the aptitudes section of the occupational profiles in the CCDO. CPW participants are tested by the General Aptitude Test Battery (GATB), receiving scores on nine of the eleven aptitudes in the profiles. It is important to

know how valuable this testing is to the actual realistic use of the profiles. Therefore, CPW participants estimated their aptitudes, using the same form as the OCS participants, so that ability to estimate aptitudes in this sample can be measured. Demographic variables measured by the Career Centre Intake Form were examined to see how they affect ability to estimate GATB scores.

Workshop leaders were interviewed to get their perceptions of the strengths and weaknesses of the program, curriculum, and materials.

D. Hypotheses for Other Evaluation Questions

Hypotheses tested to answer evaluation questions not included in the quasi-experimental study and the analytic techniques used were as follows:

Hypothesis 3: There is no difference among treatment groups on demographic variables.

Analyses: Chi square tests of independence for each demographic variable as measured by the intake form, and treatment group.

If the OCS and CPW participants differ, a selection process is taking effect. If the three groups do not differ, generalizability potential is enhanced.

Hypothesis 4: There is no difference between OCS and CPW subjects in their perceptions of program effectiveness.

Analysis: Multivariate analysis of variance with evaluation questionnaire responses and follow-up

questionnaire responses as dependent variables, and treatment group (OCS vs. CPW) as independent variables.

Hypothesis 5: There is no difference between subjects completing the Career Planning Workshop and those failing to complete it on pretest measures of career development.

Analysis: Two-way multivariate analysis of variance with pretest Career Development Inventory Exploration and Establishment Lifestage and Concern scores, Career Development Behaviours Checklist total and weighted total scores, Career Needs Survey scores, and Occupational Alternatives Question level and number of alternatives scores as dependent variables, and program completion status as independent variable.

If the null hypothesis is rejected, entering levels of career development may be related to dropping out. This result would have implications for initial screening and for program development.

Hypothesis 6: There is no difference between subjects completing the Career Planning Workshop and those failing to complete it on intake measures of demographic variables.

Analyses: Chi square tests of independence for each demographic variable as measured by the intake form, and program completion group.

Differences would have implications for screening and program development.

Hypothesis 7: There is no difference on demographic variables between successful and unsuccessful participants.

Analyses: Chi square tests of independence for each demographic variable as measured by the intake form, and program success category as established by a criterion derived from the results of the analysis of Hypothesis 1.

Differences would have implications for screening and program development.

Hypothesis 8: There is no relationship between participant perception of program helpfulness and instructor evaluation of helpfulness.

Analysis: Pearson product-moment correlation coefficients for the relationship between instructor evaluations and evaluation questionnaire responses.

Significant correlations would show that instructor evaluations have some value in determining program effectiveness.

Hypothesis 9: There is no difference on instructor evaluation of program helpfulness between successful and unsuccessful participants.

Analysis: T-test of the difference on the instructor evaluation between participants grouped by program success category as established by a criterion derived from the results of the analysis of Hypothesis 1.

A significant difference would show that instructor evaluations have some value in determining program effectiveness.

Hypothesis 10: There is no difference between the successful and unsuccessful participants on pretest measure of career

development.

Analysis: One-way multivariate analysis of variance with Career Development Inventory Exploration and Establishment Lifestage and Concern scores, Career Development Behaviours Checklist total and weighted total scores, Career Needs Survey scores, and Occupational Alternatives Question level and number of alternatives scores, on the pretest measurement, as dependent variables, and success category as independent variable.

Differences would have implications for screening.

Hypothesis 11: There is no difference between the successful and unsuccessful participants on their perceptions of program helpfulness.

Analysis: One-way multivariate analysis of variance with evaluation questionnaire responses as dependent variables and success category as independent variable.

If the null hypothesis is rejected, the success criterion and the evaluation questionnaire may be interpreted as having some proof of validity.

Hypothesis 12: There is no difference in program success between subjects for whom work is a relatively important source of satisfaction, and those for whom it is not.

Analysis: Chi square test for independence of distribution of work importance and program success according to the criterion established from the results of Hypothesis 1. Subjects rating work as first or second source of satisfaction will be in the work-important category;

others will be in the work unimportant category.

Rejection of the null hypothesis would indicate whether the importance of work to the individual affects the effectiveness of the career development programs. This would have implications both for screening of participants and for career development theories which assume the centrality of work.

Hypothesis 13: There is no difference in career development as a result of treatment between subjects for whom work is a relatively important source of satisfaction, and those for whom it is not.

Analysis: One-way multivariate analysis of variance or covariance with Career Development Inventory Exploration and Establishment Lifestage and Concern scores, Career Development Behaviours Checklist total and weighted total scores, Career Needs Survey scores, and Occupational Alternatives Question level and number of alternatives scores, on the follow-up measurement, as dependent variables, work importance category as independent variable, and the pretest scores on the dependent variables as covariates if required, for subjects in the active treatment groups.

Hypothesis 14: There is no relationship between estimated and measured aptitudes in a sample of adults.

Analyses: Pearson correlations between estimated and measured scores on the aptitudes measured by the General Aptitude Test Battery

If the correlations are of practical significance, OCS participants are not working with less information than CPW participants whose aptitudes are measured.

For all hypotheses, a probability of .05 or less shall be regarded as sufficient for rejection of the null hypothesis.

V. Accuracy Of Aptitude Self-Estimates Of Adults

Hypothesis 14, concerning the accuracy of aptitude estimates of adults, was tested using a different, though overlapping, sample, and thus was analyzed separately from the major portion of the study. For that reason, the results will be reported separately in this chapter. The sample consisted of CPW participants for a seven-month period for whom both estimated aptitude scores and measured aptitude scores were available. Some were in both studies.

Knowledge of aptitudes is of obvious value in career counselling. Whether it is necessary to use standardized tests to obtain this knowledge is not as obvious. As Goldman (1971) says:

> . . .How well can counselees estimate their scores on tests? Answers to these questions would be useful in determining the value of the universal use of tests in counselling. . . . Are students (or at least some of them) able to estimate their own abilities, interests, and achievements well enough that they don't need help from tests or counsellors in this area? (p. 78)

Goldman's review indicated that only a small amount of research has attacked this problem, with contradictory results.

The purpose of this part of the study was to investigate the accuracy of self-estimates of aptitudes in a sample of adults, and to determine whether degree of

accuracy was related to the specific aptitude, and to demographic characteristics of the subject. Specifically, it was hypothesized that direction and amount of error of estimates of each aptitude would vary with sex, level of education, age, employment status, and time since last in school.

As participants in the Occupational Choice Seminars base their decisions on their estimates of their abilities, in contrast to the Career Planning Workshop subjects, who actually complete the General Aptitude Test Battery, it was desired to determine how much this actual measurement contributed to the value of the program. If some types of adults are more successful at estimating their aptitudes than others, counsellors could use this information in determining which clients would benefit from aptitude testing and which could do without.

It seemed likely that sex stereotyping might affect self-estimates, in that some aptitudes are considered more "feminine," and others, more "masculine." Level of education could affect self-estimates through the nature of the reference group with which the subject compared himself or herself. Age could lead to increased accuracy because of a wider experience base, or decreased accuracy because of exposure to a narrower reference group. Employment status could influence self-concept, and thus self-estimates. Time since last in school could affect self-estimates as a function of the time since subjects were able to compare

themselves to others in a quantitative fashion.

The direction of effect of each of these variables was not predicted because of the lack of previous research bearing directly on these variables. Greene, Harris, and Macon (1979) found that college students were better at identifying their aptitude profiles than their personality profiles when the profiles were compared with inversions of the profiles, and that the ability to identify the correct profile increased with level of education. These results indicate that knowledge of one's aptitudes has some accuracy and increases with education, but does not give any basis for predicting direction of error.

Booth and Laurin-Dumas (1980) analyzed the relationships between estimated and measured General Aptitude Test Battery (GATB) scores with a sample of 112 adults seeking employment. Estimates were gathered as either percentiles, standard scores, or levels. Percentiles and levels were converted to standard scores, which were then correlated with measured scores. Their sample consistently underestimated aptitudes. Significant correlations were found on all aptitudes except Motor Coordination (K). No report of the relationship of demographic variables to accuracy was made.

Holland's Self-Directed Search (SDS) (Holland, 1979) includes self-ratings of competencies, abilities, and skills which are used to place the respondent in Holland's categories. Kelso, Holland, and Gottfredson (1977)

investigated the correlations of these SDS scales with scores on the Armed Forces Vocational Aptitude Battery (AFVAB), with a sample of high school girls. Correlations were generally low (.44 was the largest), but subjects were not asked to predict their scores on the specific aptitudes measured by the AFVAB. The sample was homogeneous in age, sex, and education. However, the results can be interpreted to show concurrent validity of self-estimates.

The General Aptitude Test Battery (GATB) (United States Department of Labor, 1970) is widely used in career and employment counselling, and its scales are the basis of aptitude profiles for the nearly 7 000 occupations in the Canadian Classification and Dictionary of Occupations (CCDO) (Manpower and Immigration Canada, 1971). Knowledge of one's rating on these aptitudes is required for effective use of a variety of CCDO-based counselling techniques, including the Index to Canadian Occupations (ICO) (Employment and Immigration Canada, 1979) and the computerized CHOICES system. The GATB takes several hours to administer and requires special apparatus and qualified personnel. If aptitude information is available without recourse to testing, a saving in time and resources can be made.

A. Method

Subjects were 110 adults participating in Career Planning Workshops. Subjects varied in age (17 to 51 years, with a mean of 28), sex (39 males, 71 females), educational

level (one-quarter lacked a high school diploma, and one-third had some post-secondary education), employment status (nearly half were employed full-time), and time out of school (one-fifth were full-time students less than a year previously, and three-tenths had been out of school for more than 10 years).

Subjects estimated their aptitude scores as part of the second class. They were given descriptions of the aptitudes based on definitions in the GATB Manual, and asked to rate themselves on a scale from 1 to 5 for each aptitude, comparing themselves to the entire working population. Ratings were defined as follows:

1 - You believe your ability would place you in the top 10% of the working population.

2 - You believe your ability would place you in the upper third of the working population but not in the top 10%.

3 - You believe your ability would place you in the middle third of the working population.

4 - You believe your ability would place you in the lower third of the working population but not in the lowest 10%.

5 - You believe your ability would place you in the lowest 10% of the working population.

These are the categories used in the CCDO aptitude profiles.

All subjects were given the GATB during the third class.

Actual GATB standard scores, with a mean of 100 and standard deviation of 20, were converted into the 5-point format, which maintains the normality of the distribution.

Demographic data for subjects were available from intake forms completed before course registration.

B. Results

As Singer and Stefflre (1954) point out, correlation coefficients alone are insufficient to test the accuracy of estimates. Actual and estimated scores may correlate highly, yet with constant error (over- or underestimation) may be quite inaccurate. Similarly, comparing the means and distributions of actual and estimated scores reveals only group accuracy of estimates of group score distribution, giving no information about the relationship of individuals' estimated and actual scores. Taken together, the correlations, means and standard deviations can be used to judge individual accuracy of estimation. If the estimates of an aptitude correlate highly with actual aptitude scores, and the mean and standard deviation of the estimates is similar to the mean and standard deviation of the actual scores, individual accuracy of estimation likely exists. Other distributional features, such as differences in skewness or kurtosis, could still reveal individual inaccuracy, even given those conditions, but their effects are not likely to be large.

Accordingly, for each aptitude, correlations of

estimated and actual scores, and means and standard deviations of both estimated and actual scores, were calculated. Also calculated were means and standard deviations of error scores for each aptitude (estimated score less actual score for each individual) and of absolute error scores (the absolute value of error scores). The correlations of actual and estimated scores within groups of subjects grouped by sex, educational level, or employment status were also calculated. Summary data are presented in Tables 1, 2, and 3.

The data indicate that the subjects were not able to make accurate estimates of their aptitudes. The correlations are generally low, although many reach statistical significance.

Error scores on the nine aptitudes were summed for each subject to create total error scores, which were used to divide subjects into groups on the basis of the direction of their error totals. Subjects whose total error scores were greater than 2 (N = 52) were classified as underestimators. Those whose scores were less than -2 (N = 28) were overestimators, and the remainder (N = 30), whose scores were between -2 and +2 inclusive, were classified as random error makers.

Discriminant analyses were then performed separately for males and females to see if overall direction of error could be predicted from information usually available to counsellors early in the counseling process. The

Table 1

Means and Standard Deviations

Estimated and Actual Aptitude Scores and Estimation Errors

	Estimated		Actual		Error		Abs. Error	
Apt.	Mean	S. D.	Mean	S. D.	Mean	S. D.	Mean	S. D.
G	2.29	0.73	2.36	0.81	-0.07	0.86	0.56	0.66
V	2.41	0.82	2.44	0.86	-0.03	1.00	0.70	0.71
N	2.59	0.98	2.56	0.95	0.03	1.05	0.76	0.72
S	2.85	0.95	2.46	1.05	0.39	1.08	0.86	0.76
P	2.47	0.80	2.12	0.98	0.36	1.14	0.88	0.80
Q	2.54	0.83	1.67	0.78	0.86	1.01	1.05	0.82
K	2.36	0.89	2.16	1.00	0.19	1.28	0.99	0.83
F	2.39	0.92	2.68	1.10	-0.29	1.30	0.98	0.89
M	2.13	0.91	2.12	1.16	0.01	1.36	1.01	0.90

Apt. = Aptitude

G = General learning ability

V = Verbal aptitude

N = Numerical aptitude

S = Spatial aptitude

P = Form perception

Q = Clerical perception

K = Motor coordination

F = Finger dexterity

M = Manual dexterity

Table 2

Correlations of Estimated and Actual Aptitude Scores

Full Sample, and Grouped By Sex or Educational Level

Apt.	All	Male	Fem.	No D	HS D	PSec
	n=110	n=39	n=71	n=28	n=45	n=36
G	.376***	.511***	.322**	.304	.292*	.341*
V	.292***	.425**	.215*	.206	.260*	.222
N	.416***	.317*	.464***	.401**	.413**	.110
S	.413***	.388**	.419***	.353*	.358*	.529***
P	.197*	-.051	.309**	.335*	.034	.239
Q	.217*	.337*	.155	.146	.143	.384**
K	.088	.047	.119	-.007	.117	.230
F	.188*	.257	.078	.008	.044	.581***
M	.151	.066	.184	.250	.126	.239

*p <.05 (one-tailed)

**p <.01 (one-tailed)

***p <.001 (one-tailed)

Fem. = Female

No D = Subjects with less than a high school diploma

HS D = Subjects with a high school diploma but no more

PSec = Subjects with some postsecondary education

Table 3

Correlations of Estimated and Actual Aptitude Scores Employment Status and Age Subgroups

Apt.	Wkrs n=77	Unemp n=24	17-21 n=33	22-26 n=28	27-33 n=20	34-51 n=29
G	.399***	.238	.164	.547***	.502*	.397*
V	.293**	.066	.109	.399*	.293	.441**
N	.395***	.468*	.303*	.450**	.290	.495**
S	.351***	.596***	.341*	.641***	.573**	.200
P	.266**	-.157	-.029	.079	-.118	.423*
Q	.166	.200	.319*	.126	.333	.172
K	.081	.023	-.038	-.156	.031	.313*
F	.225*	-.162	.017	.154	.477*	.198
M	.183	.149	.068	.204	.039	.210

*p <.05 (one-tailed)

**p <.01 (one-tailed)

***p <.001 (one-tailed)

Wkrs = Workers, including homemakers

Unemp = Jobless subjects

17-21, 22-26, 27-33, 34-51 = Age groups in years

discriminators used for each sex were employment status, level of education, age, time since last full-time education, and self-estimate of general learning ability. Employment status was converted to a three-value linear variable by ordering the categories student, worker (including homemaker), and jobless on the basis of the observed median direction of error within each group. Students were most likely to underestimate aptitudes, workers somewhat less likely, and jobless least likely.

A stepwise discriminant analysis using minimization of the Wilks' Lambda statistic as the selection criterion was performed.

For the male subgroup, level of education, estimated general learning ability, employment status, and age were effective discriminators. Using these variables, 62% of males could be correctly classified in one of the three groups.

For the female subgroups, level of education, employment status, estimate of general learning ability, time since last education, and age were effective discriminators, classifying 66% of subjects correctly.

C. Discussion

The low level of correlations and the relative weakness of the discriminant functions indicate that for practical purposes in counselling, self-estimates of aptitudes are

inadequate substitutes for aptitude test results. Not only could the subjects not estimate their aptitude scores successfully, but the direction of error is also difficult to predict.

The existence in the full sample of significant positive correlations between actual and estimated scores for all aptitudes except the psychomotor skills does indicate that estimates are better than nothing for these aptitudes. No subgroup had a significant correlation for manual dexterity, although the full group, subjects with postsecondary education, workers, and those between 27 and 33 years of age did have significant positive correlations between their actual and estimated finger dexterity scores, and those subjects 34 years of age and older had a significant positive correlation between motor coordination estimates and scores.

Subgroup differences in accuracy (as measured by correlations of estimated and actual scores) exist, but have no obvious explanations. For example, differences between correlations for the male and female subgroups were significant for general learning ability (G) ($p < .05$), verbal aptitude (V) ($p < .05$), and form perception (P) ($p < .01$), with the males being superior in G and V, and the females in P. There were no group differences in means of actual or estimated scores for any of the aptitudes.

It may be that self-concept interacts with aptitude to interfere with or enhance accuracy of estimation, and that

this interaction is partly related to sex. For example, verbal ability may be more central to the self-concept of females, as it is supposed to be a more "feminine" ability, and females may be expressing the "femininity" of their self-image rather than their realistic appraisal of verbal ability when they estimate their verbal aptitude. Males, in contrast, may be able to appraise their verbal aptitudes more accurately because verbal ability is not important to their self-concept. The same explanation could apply to G.

A possible explanation for the difference in accuracy estimating P is that one of the two tests contributing to this scale consists of shaded pictures of common tools, which must be matched with identical pictures. Perhaps some males are more familiar with these tools than other males, and this irrelevant factor affects their scores, while most women are equally unfamiliar with the tools.

Other subgroup correlations with significant differences were finger dexterity, where the subjects with postsecondary education had higher correlations between estimated and actual scores than either the subjects with less than a high school diploma ($p < .05$) or subjects with high school diplomas ($p < .01$), and spatial aptitude, where the 22-to-26-year-old subjects had a higher correlation than the 34-to-51-year-old subjects.

The general trend of the data indicates that the more cognitive areas are the more accurately estimated, in contrast to the psychomotor aptitudes. Level of education

does not seem to have a consistent effect on accuracy, but it does affect direction of error, with more education leading to underestimation of aptitudes. Workers are generally more accurate than the unemployed.

One question which deserves investigation is whether measured aptitudes are better predictors of job success than estimates of aptitudes. Both could be equally weak or strong. Another question is whether aptitudes are always a particularly important factor in job success and job satisfaction. It may be that aptitude testing, though necessary for accurate information on aptitudes, is not useful for some types of clients or in particular career areas.

The results of this portion of the evaluation indicate that if knowledge of aptitudes is an important factor in the career decision-making of a client, that client will usually get that knowledge only through aptitude testing. Thus, the CPW, which includes such testing, should be more helpful to such clients. The assumption which is made, but which should be investigated, is that GATB scores are true representations of levels of relevant aptitudes. If they are not accurate, or if what they measure is irrelevant to career success, it makes little difference whether measured or estimated scores are used.

VI. Results and Analyses

Attrition is inevitable in any longitudinal study. Although follow-up sets of instruments were mailed to all subjects, along with a stamped, addressed envelope and a covering letter, and most of those failing to respond in a reasonable period of time were contacted by telephone, there were a number of subjects from whom the follow-up measurements were not received.

Of the 103 participants in Career Planning Workshops on whom some data was collected, 33 were not sent follow-up instruments. These subjects were in the last two workshops of the seven included in the sample, and it was anticipated that there would be insufficient time to complete data collection for them. They did, however, complete the follow-up evaluation form immediately after program completion. Of the remaining 70, 26 (37%) completed the follow-up instruments.

Of the 50 participants in the seven Occupational Choice Seminars included in the study, 25 (50%) completed the follow-up instruments, as did 20 of 31 members of the comparison group (65%).

A postal strike lasting about two months occurred during the follow-up data collection phase. As this phase was conducted by mail, the strike undoubtedly had an effect on the attrition rate. However, many participants sent in their questionnaires after the postal disruption ended. For some of the subjects, the time elapsing before follow-up may

have been nearer six months than the three months planned. Since these subjects were in all three groups, it is unlikely that the delay affected the validity of the data. The majority of those affected were in the comparison group, so if changes on measured career development were due to the passage of time and greater time lapses led to greater changes, it is the no-treatment group that had the advantage.

Some of the subjects failed to complete some parts of the instruments. As a result, some analyses will have been based on smaller groups than indicated above.

A. Hypothesis 1

The first hypothesis was that there is no difference due to treatment on measures of career development among the groups. In order to choose the proper analytic technique for testing this hypothesis, it was necessary to conduct a preliminary two-way multivariate analysis of variance. The pretest career development measures were used as dependent variables. Group membership was one independent variable. The other was created by dividing the subjects into those who had completed the follow-up instruments and those who had not.

The purpose of this analysis was to measure the degree of equivalence of the three groups before treatment on level of career development. A main effect for the second independent variable, data completeness, would have

indicated that it would be unwise to generalize too much from comparisons involving only those who completed the follow-up instruments. A main effect for treatment group would show that the groups were not equivalent in pretest career development, and therefore these differences must somehow be controlled for in further analyses. An interaction effect, had it occurred, would have posed an interpretive challenge.

The analyses were performed using Release 9 of the Statistical Package for the Social Sciences (SPSS) (Hull & Nie, 1981; Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975) as implemented on an Amdahl 470V/8 at the University of Alberta.

As Table 4 shows, the only significant effect from the multivariate test of significance used (Wilks' Lambda) was the effect for treatment group.

Table 5 gives the univariate *F*-tests for the dependent variables for this effect. Use of this test does not take into account the shared variance of the dependent variables, but the results are not affected by the ordering of the variables, unlike the stepdown *F*. The stepdown test is the equivalent of the univariate *F* covarying the preceding variables (Bock & Haggard, 1968). Use of the latter test takes into account the shared variance of the dependent variables, and the results are affected by the ordering of the variables. Since the purpose of this part of the preliminary analysis is to determine whether the groups

Table 4

3 By 2 Multivariate Analysis of Variance (Treatment Group By Data Completion Status) On Pretest Measures Of Career Development

Effect	Wilks' Lambda	Approx. *F*	Degrees of Freedom	Probability
Treatment Group	0.756	2.572	18,308	.001*
Data Completion	0.907	1.760	9,154	.080
Interaction	0.853	1.416	18,308	.122

*significant beyond criterion level

Table 5

Univariate *F*-tests For Treatment Group Effect On Pretest Measures Of Career Development

Variable	*F* Value	Degrees of Freedom	Probability
CDBC Total	0.136	2,162	.873
CDBC Weighted	0.686	2,162	.505
CDI Scales:			
Exploration Lifestage	8.999	2,162	.001*
Establishment Lifestage	0.309	2,162	.734
Exploration Concern	1.877	2,162	.156
Establishment Concern	0.955	2,162	.387
Career Needs Survey	3.281	2,162	.040*
OAQ Group	3.715	2,162	.026*
OAQ Alternatives	1.315	2,162	.271

*significant beyond criterion level

differ on many of the measures of career development before treatment so as to indicate the appropriate further analyses, the univariate test is more helpful in this case.

Three of the dependent variables were significantly different among the three treatment groups on the pretests. These were the Exploration Lifestage scale of the Career Development Inventory, the total needs expressed on the Career Needs Survey, and vocational decidedness level on the Occupational Alternatives Questionnaire. Differences on the other five measures were not significant.

It was therefore decided to control for the effect of the initial differences on the measures of career development by using one-way multivariate analysis of covariance, with the pretest scores on the measures as covariates. The result of this analysis was rejection of the null hypothesis. A Wilks' Lambda of 0.492 gave an approximate F of 2.177 with 18 and 90 degrees of freedom ($p < .009$).

Table 6 gives the results of the univariate F-tests for the dependent variables, while Table 7 gives the stepdown F-test results. Both are reported, as comparison of the two sets of tests gives an unexpected result.

The purpose of examining the stepdown analysis is to isolate the source of the variance by removing common variance at each step. Often such a procedure will reduce the number of dependent variables showing a significant difference, as differences among treatment groups on two

Table 6

Univariate *F*-tests For Treatment Group Effect On Follow-up Measures Of Career Development

Variable	*F* Value	Degrees of Freedom	Probability
CDBC Total	1.700	2,54	.192
CDBC Weighted	0.709	2,54	.496
CDI Scales:			
Exploration Lifestage	2.549	2,54	.088
Establishment Lifestage	0.190	2,54	.827
Exploration Concern	1.062	2,54	.353
Establishment Concern	1.459	2,54	.241
Career Needs Survey	6.180	2,54	.004*
OAQ Group	1.200	2,54	.309
OAQ Alternatives	1.265	2,54	.291

*significant beyond criterion level

Table 7

Stepdown *F*-tests For Treatment Group Effect On Follow-up Measures Of Career Development

Variable	*F* Value	Degrees of Freedom	Probability
CDBC Total	1.700	2,54	.192
CDBC Weighted	3.319	2,53	.044*
CDI Scales:			
Exploration Lifestage	2.078	2,52	.135
Establishment Lifestage	1.072	2,51	.350
Exploration Concern	0.190	2,50	.828
Establishment Concern	2.163	2,49	.126
Career Needs Survey	6.427	2,48	.003*
OAQ Group	0.506	2,47	.606
OAQ Alternatives	1.466	2,46	.241

*significant beyond criterion level

separate variables that are highly correlated with each other may be a result of a difference on a factor measured by both variables. A single source of variation would be measured in two different ways. Since all the measures used in this analysis purport to measure aspects of career development, it would not be surprising to find such a result when comparing the stepdown analyses with the univariate analyses.

The rationale for performing a univariate analysis in this case is that it is desired to identify which measure most clearly indicates the changes in career development that resulted from treatment. This measure can be identified by its having the smallest univariate probability, and thus the greatest significance.

Thus it would normally be expected that with the measures used here several might show individual significant differences on the univariate tests, but that the stepdown tests would show fewer measures with significant differences when shared sources of variance are removed. An examination of Table 6 and Table 7 shows that the reverse occurred in this case. Only the Career Needs Survey showed significant univariate differences among treatment groups ($p < .004$). On the stepdown tests, after the effect of the first variable, CDBC total score, was entered as a covariate, the second variable, CDBC weighted score, also showed a significant difference among treatment groups ($p < .05$).

It seems that the method used to score the Career

Development Behaviours Checklist may not be optimally effective.

B. Hypothesis 2

The second hypothesis was that there is no change in career development in the time between program completion and the follow-up measurement. To test this hypothesis, scores on all of the career development variables except the Career Needs Survey at program completion and three months later were available only for the participants in the Career Planning Workshops. Time limitations made it impractical to collect this data from the Occupational Choice Seminar groups except for the brief Occupational Alternatives Question.

None of the Career Development Inventory scales showed any significant differences between the posttest and the follow-up measure for the 21 CPW participants for whom both sets of measures were available. The number of alternatives chosen on the Occupational Alternatives Question showed a significant decrease from 2.80 to 1.95 ($N = 20$, $t = 2.60$ with 19 degrees of freedom, $p < .02$). This measure was significantly different for the combined OCS and CPW groups for whom it was available ($N = 45$, $t = 3.46$, $p < .001$), and for the OCS group alone ($N = 25$, $t = 2.79$, $p < .01$).

Neither the CDBC total scores nor the CDBC weighted scores changed significantly over the follow-up period for the CPW participants.

C. Hypothesis 3

The third hypothesis was that the treatment groups did not vary on demographic variables as measured by the Intake Information Form. As these variables were primarily nominal or ordinal, chi square analyses for independence of distribution were performed for each variable of interest. The groups did not differ on the distribution of sex, length of work experience, time since last employed, or levels of education. A one-way univariate analysis of variance with age as the dependent variable was also performed, and no differences were found. Average ages were 29.2 for the CPW participants, 29.5 for the OCS participants, and 29.6 for the comparison group members.

The groups did differ significantly in employment status (Table 8) with the comparison group having a larger proportion of full-time employed than the treatment groups. Another difference among the groups was in time since last in school, with the comparison group having proportionately fewer in the 1 to 2 years category and 2 to 5 years category, and more in the 5 to 10 years category, compared to either active treatment group. Proportions in the extreme categories, less than one year and more than 10 years, were similar for all three groups.

When only the two active treatment groups were compared, no significant differences were found on any demographic variables.

Table 8

Crosstabulation of Employment Status by Treatment Group

GROUP	Full-Time Employ	Part-Time Employ	Home-maker	Full-time Studnt	Part-time Studnt	Unem-ployed	Social Assist	Row Total
CPW	44	12	16	2	2	19	4	99
(%)	44	12	16	2	2	19	4	
OCS	18	2	5	3	2	11	8	49
(%)	37	4	10	6	4	22	16	
Comp.	23	4	0	2	0	2	0	31
(%)	74	13	0	7	0	7	0	
Total	85	18	21	7	4	32	12	179
(%)	47	10	12	4	2	18	7	

Chi Square = 30.16 with 12 degrees of freedom ($p < .003$)

("Comp.": Comparison group)

D. Hypothesis 4

This hypothesis posited no difference between the CPW and OCS groups on their perceptions of program effectiveness as measured by the six scales of the Evaluation Questionnaire. A one-way multivariate analysis of variance was performed. The multivariate test of significance, Wilks' Lambda, resulted in failure to reject the null hypothesis. The Wilks' Lambda value of 0.754 gave an approximate *F* of 2.171 with 6 and 40 degrees of freedom, which has a probability of 0.066.

E. Hypothesis 5

The fifth hypothesis was that there is no difference between those participants who completed the Career Planning Workshop and those who didn't on pretest measures of career development. Subjects who failed to attend any of the last three sessions (N = 32) were compared with those who attended at least one of those sessions (N = 60). The multivariate test of significance on the one-way multivariate analysis of variance led to failure to reject the null hypothesis. A Wilks' Lambda of 0.905 gave an approximate *F* of 0.955 with 9 and 92 degrees of freedom, which has a probability of 0.483.

F. Hypothesis 6

This hypothesis parallelled the fifth, comparing the completers and noncompleters on demographic variables. Chi square tests were used as in Hypothesis 3. The categories differed only on employment status (Table 9). Students, the unemployed, and those on social assistance had higher than average dropout rates, while homemakers and the part-time employed had lower than average dropout rates.

G. Hypothesis 7

This hypothesis was that there is no difference on demographic variables between successful and unsuccessful participants. It was necessary to derive a criterion for success or non-success in the programs. Since the analysis for Hypothesis 1 indicated that only the scores on the Career Needs Survey showed significant effects for the programs, this variable was chosen as the basis for such a criterion. Accordingly, subjects were divided into two groups: those whose expressed needs had decreased in number by three or more, and those whose needs had increased or decreased by less than three. This figure was the median for the active treatment groups, placing 27 in the successful category and 24 in the unsuccessful category. The comparison group, without treatment, would have had four in the successful category, and 16 in the unsuccessful category.

Chi square analyses for independence of distribution were performed on the demographic variables measured by the

Table 9

Crosstabulation of Employment Status by CPW Completion Status

STATUS	Full-Time Employ	Part-Time Employ	Home-maker	Full-time Studnt	Part-time Studnt	Unem-ployed	Social Assist	Row Total
Inc.	16	1	2	1	2	9	3	34
(%)	47	3	6	3	6	27	9	
Comp.	28	11	14	1	0	10	1	65
(%)	43	17	21	2	0	15	2	
Total	44	12	16	2	2	19	4	99
(%)	44	12	16	2	2	19	4	

Chi Square = 15.47 with 6 degrees of freedom ($p < .017$)

("Inc.": Participants not attending any of last three sessions)
("Comp.": Participants attending at least one of last three sessions)

Intake Information Form across the categories. Only one demographic variable showed a significant interdependency: time since last in school (Table 10). The successful participants generally had more recently attended school full-time.

H. Hypothesis 8

The eighth hypothesis was that there is no relationship between participant perception of program helpfulness and instructor evaluation of helpfulness.

This hypothesis was tested separately for each active treatment group by calculating the Pearson correlation coefficient between each of the six seven-point scales on the Evaluation Questionnaire and the instructor's evaluation of the program's helpfulness to the client, also on a seven-point scale. For the CPW group, all the correlations were quite low, only one being statistically significant. Participants' ratings of program helpfulness in generating occupational alternatives correlated .210 with instructor rating of overall helpfulness (N = 66, $p < .05$). Participant rating of overall helpfulness correlated only .141 with the instructor's evaluation.

For the OCS group, instructor evaluation had a significant *negative* correlation with participant rating of program helpfulness in making a career choice ($r = -.259$, N = 49, $p < .04$). No other correlations were significant, and all but one were negative. The correlation of

Table 10

Crosstabulation of Time Since Last in School By Success Status

Status	-1 yr	1-2 yr	2-5 yr	5-10 yr	10+ yr	Row Total
Improved	6	4	9	1	7	27
(%)	22	15	33	4	26	
Unimproved	3	0	3	3	14	23
(%)	13	0	13	13	61	
Total	9	4	12	4	21	50
(%)	18	8	24	8	42	

Chi Square = 11.08 with 4 degrees of freedom ($p < .026$).

(Improved: participants reducing career needs by three or more)

(Unimproved: participants reducing career needs by two or less)

participant overall helpfulness rating with instructor evaluation was -.027.

I. Hypothesis 9

The ninth hypothesis was that there is no difference in instructor evaluation of program helpfulness between successful and unsuccessful participants.

Success was judged on the same criterion as in Hypothesis 7. A two-way analysis of variance,using treatment group as the other independent variable, resulted in failure to reject the null hypothesis. For the two-way analysis, the main effect for success had an *F* value of .00021 with 1 and 47 degrees of freedom (p = .988). The main effect for treatment group had an *F* of 1.966 with 1 and 47 degrees of freedom (p = .167), while the interaction effect had an *F* of .175 (p = .678).

J. Hypothesis 10

This hypothesis stated that there was no difference between the successful and unsuccessful participants on pretest measure of career development. The one-way multivariate analysis of variance with Career Development Inventory Exploration and Establishment Lifestage and Concern scores, Career Development Behaviours Checklist total and weighted total scores, Career Needs Survey scores, and Occupational Alternatives Question level and number of alternatives scores, on the pretest measurement, as

dependent variables, and success category as independent variable, resulted in failure to reject the null hypothesis. A Wilks' Lambda of 0.724 gave an approximate *F* of 1.608 with 9 and 38 degrees of freedom (*p* = .148).

K. Hypothesis 11

The eleventh hypothesis was that there is no difference between the successful and unsuccessful participants on their perceptions of program helpfulness.

A one-way multivariate analysis of variance with evaluation questionnaire responses as dependent variables and success category as independent variable resulted in failure to reject the null hypothesis. A Wilks' Lambda of 0.955 gave an approximate *F* of 0.314 with 6 and 40 degrees of freedom (*p* = .926).

L. Hypothesis 12

This hypothesis posited no relationship between the distribution of program success and work importance in active treatment clients. Participants who rated work as first or second most important source of life satisfaction (N = 23) were in the important group, while those rating work as less important (N = 22) were in the work-unimportant category.

A chi square test for independence of distribution resulted in failure to reject the null hypothesis (Table 11).

Table 11

Crosstabulation of Work Importance By Success Status

Status	Work Important	Work Unimportant	Total
Improved (%)	13 52	12 48	25
Unimproved (%)	11 46	13 54	24
Total (%)	24 49	25 51	49

Corrected Chi Square = 0.021 with 1 degree of freedom (p = .884).

(Improved: participants reducing career needs by three or more)

(Unimproved: participants reducing career needs by two or less)

M. Hypothesis 13

This hypothesis was that there is no difference in career development as a result of treatment between subjects for whom work is a relatively important source of satisfaction, and those for whom it is not.

A one-way multivariate analysis of covariance with the members of the active treatment groups divided into work-important and work-unimportant categories as the independent variable, and the same dependent variables and covariates (the career development measures) as used in Hypothesis 1. The multivariate test of significance resulted in failure to reject the null hypothesis. A Wilks' Lambda of 0.685 gave an approximate *F* of 1.327 with 9 and 26 degrees of freedom (p = .271).

N. Instructor Interviews

The seven CPW sections and seven OCS groups involved in this study were taught by five different instructors, three of who taught both types of program, and two of whom taught CPWs only. All were hired on a contract basis by the Career Centre.

The instructors were interviewed to gather their perceptions of the programs. Questions included on the interview protocol asked the instructors to identify the most useful and least useful parts of the programs they were familiar with, to compare the two programs if they had

taught both, to recommend changes, to state which previous experiences or training they had found most useful in teaching the programs, to describe what kind of training they had been given and what kind they would like to have had, to list what kind of other support they received and what kind they would like to have had, and to rate the appropriateness of the facilities and the pay scale.

The use of the key-sort was felt to be one of the most helpful features of the Occupational Choice Seminars by all who had taught it, because of its concrete results and production of alternatives. One instructor also mentioned the research phase as particularly valuable in leading participants to realistic decisions. Least helpful feature of the OCS in the opinion of the instructors was the action planning segment. It was felt that students were not ready for serious consideration of action plans so soon after beginning the process. Fatigue by the end of the seminar also was a factor.

The most useful part of the CPW was said to be the self-evaluation exercises that form a large part of the program. The value of these was seen to be their requiring the participants to make explicit their interests and abilities. "Few people usually analyze what life activities have been really satisfactory," one instructor said. Also mentioned by some instructors were the keysort, and for some clients the GATB.

There was no consensus on the least helpful part of the

CPW. Two instructors mentioned the decision-making model, stating that it was difficult for many clients to relate the model to career choice. Also mentioned twice was the action planning unit. This part was seen as too much, too soon, even though it was the last unit in a nine-week program. One instructor thought the GATB was the least useful feature, as it tended to be perceived as giving clear answers, having greater reliability than the instructor felt it merited. Another instructor felt that many clients found the career-planning model was confusing and difficult to understand.

Those who had taught both programs agreed that they met different needs. The CPW was seen as being especially suited for clients who don't know where to begin or which way to go. Two instructors also felt the longer program required a higher degree of motivation. Clients for whom the OCS is more appropriate are those who have a relatively stable personal life and well-developed areas of interest.

The length and slow pace of the nine-week workshop were seen as factors requiring improvement. Instructors suggested meeting twice a week or compressing the program into fewer classes. Although most of the instructors felt the written materials provided were adequate, one felt the text was out of touch with current conditions in the labour market, and the course a a whole lacked the flexibility to deal with the slower or less educated student. A program with less theory, simpler exercises, and videotapes or films in place of some

of the written work was suggested for these clients.

As there is a continuing turnover of instructors and expansion in the number of sections offered, it is of interest to determine what criteria can be applied in choosing instructors. Thus the instructors were asked what past experiences and training they had found were the most valuable in their role as instructor. The most common experience of value was in dealing with groups, which gave the necessary leadership skills. Several felt that counselling experience had been an asset, and training in psychology was also mentioned. The instructors also drew upon their own career development experiences.

The typical training program offered to the instructors by the Career Centre was participation in one Occupational Choice Seminar. Some also received specific instruction in the use of the keysort. It was the general feeling that this training was sufficient.

The instructors had also received, and expressed appreciation for, continuing consultative support from Career Centre staff. Most of the instructors felt no other type of support was required, but one suggested a more thorough orientation to the materials in the Career Centre library would have been helpful.

The physical facilities were felt to be barely adequate, with larger groups lacking sufficient space in the meeting room. On the other hand, the small room was felt to be an asset for the OCS groups, which were generally smaller

in size. The location of the Career Centre, with limited parking in the daytime and inconveniently placed for bus travel, was seen as a drawback.

The instructors felt the scale of remuneration for the CPWs was adequate, but that the lower hourly rate for the OCS was not justified. It was suggested that there should be an experience increment.

VII. Discussion, Conclusions, and Recommendations

A. Program Effectiveness

The rejection of the null hypothesis for Hypothesis 1 supports the conclusion that the programs are effective in facilitating career development.

As Figure 2 indicates, the Career Needs Survey measured a large decrease in needs for both OCS and CPW participants, while needs for the comparison group remained stable. Both programs seem about equally effective in reducing the number of perceived needs. The CPW reduced the number of needs expressed by the average participant by 3.0, compared to 2.5 for the OCS participants.

Another source of support for the effectiveness of the programs is the result of the Evaluation Questionnaire. Figure 3 shows the average rating given in each of the six categories. Since the analysis for Hypothesis 4 showed no significant difference between the two active treatment groups, OCS and CPW responses are combined. Only one factor averaged less than five on a seven-point rating scale (helpfulness in making a career choice), and that part of the program received a rating of 4.77. If client satisfaction is any guide, the programs are successful.

The client satisfaction measures appear to be entirely independent of the criterion for "success" developed from the results of the analysis of the first hypothesis. As the analysis of Hypothesis 11 indicates, there was no difference

Figure 2

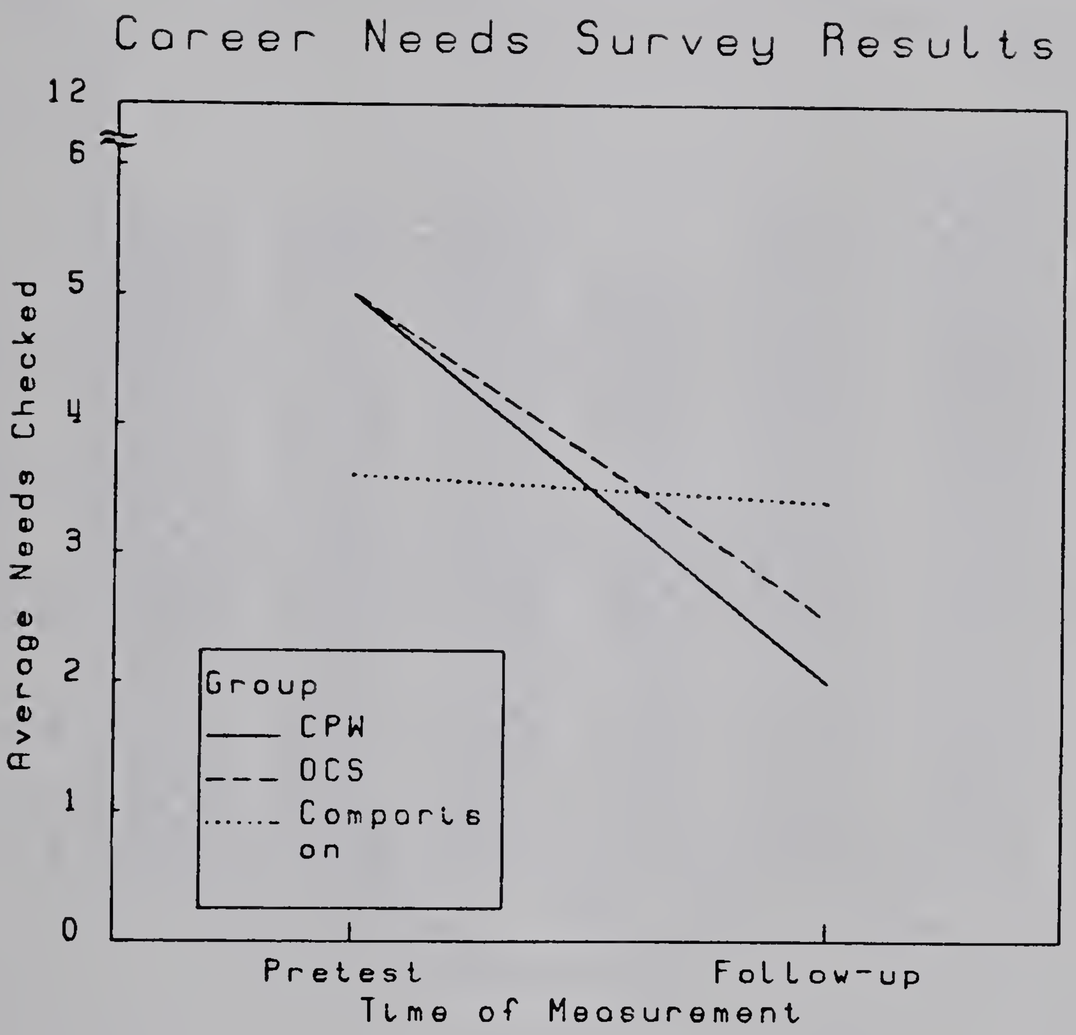
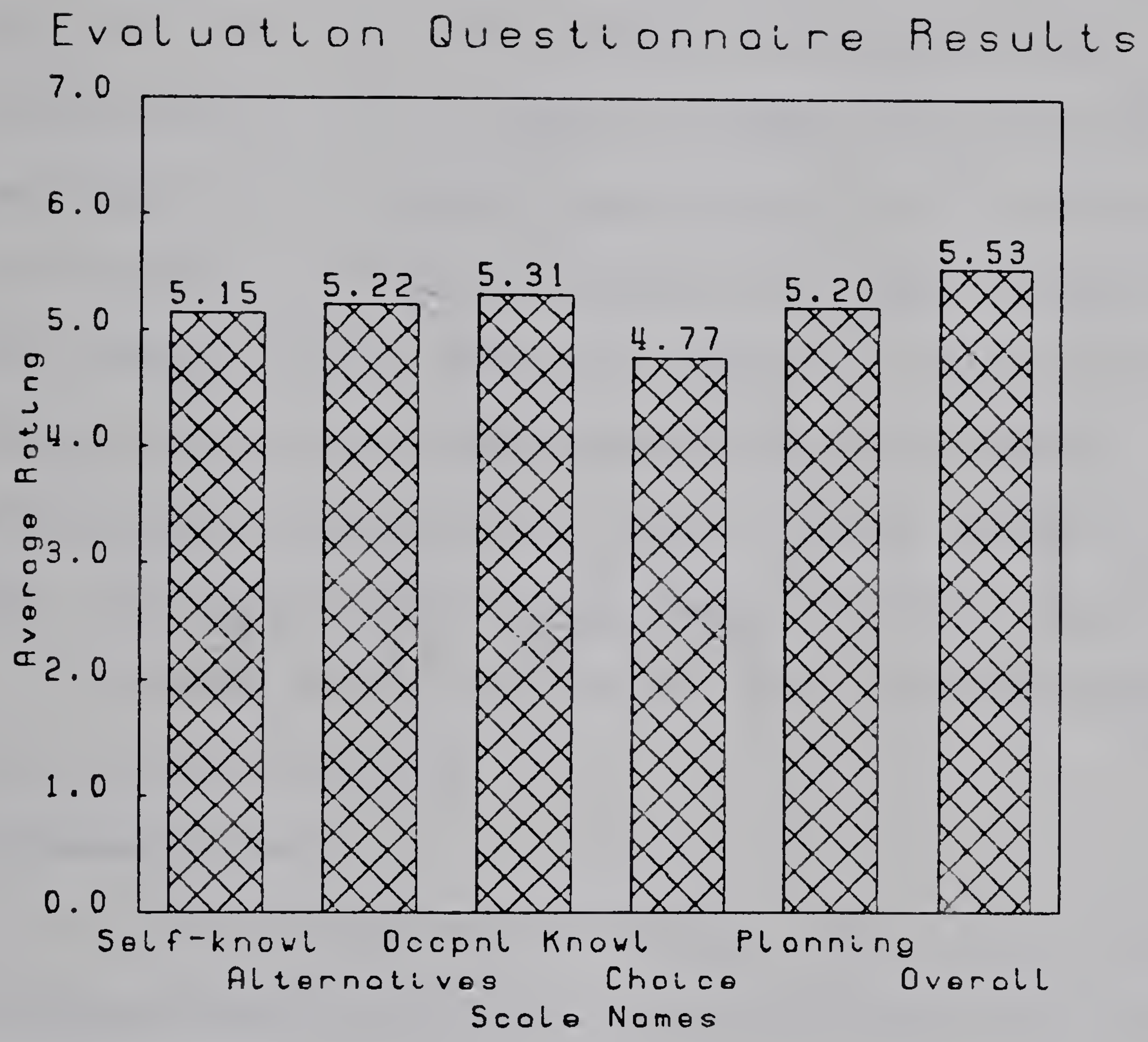

Career Needs Survey Results
12
6
5
4
3
2
1
0
Average Needs Checked
Group
CPW
OCS
Comparison
Pretest
Follow-up
Time of Measurement

Figure 3


Evaluation Questionnaire Results
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Average Rating
5.15
5.22
5.31
4.77
5.20
5.53
Self-knowl
Alternatives
Occpnl Knowl
Choice
Planning
Overall
Scale Names

between the evaluation questionnaire responses of those who reduced their number of expressed needs on the Career Needs Survey by at least three, and those who did not.

The instructor interviews indicate that the programs may serve different types of clients, that OCS clients, especially the more successful ones, were usually at a later stage of career development, with a clearer idea of what they were seeking. This perception is given some support by an examination of the specific needs indicated on the intake responses to the Career Needs Survey. Of the CPW participants, 73% had indicated that they needed to know what kinds of jobs there are (Need 5), and 23% said they needed to know more about specific jobs (Need 6). OCS participants indicated the general need (Need 5) 68% of the time, and the specific need (Need 6) 52% of the time.

It seems best to allow for this difference by providing both kinds of service.

Recommendation 1

1. It is recommended that both the Career Planning Workshops and the Occupational Choice Seminars continue to be offered.

B. Measurement of Career Development

If one accepts the evidence given that the two programs under evaluation are effective in facilitating career development, it is a necessary corollary that the majority of the instruments used in this study to evaluate career

development are ineffective, at least in this context. Only the Career Needs Survey, a very simple checklist of self-perceived needs, gave clear-cut evidence of changes resulting from the programs.

The Career Development Inventory

Of the measures used, Super's Career Development Inventory Adult Form I is the most elaborate. It is based on a comprehensive theory of career development and has undergone considerable development. Yet even without assuming that something happened to the program participants that should have been measured by the CDI, there are indications that it is not a successful measure.

An examination of the structure of the instrument reveals that it is open to criticism from a design standpoint. The full test consists of 120 items, divided evenly among four stages from Super's theory, each of which is subdivided into ten items from each of the three substages of each stage. These items are arranged in strict order of the substages and stages. Yet it is a commonplace of test design that the way a subject responds to items early in a test is often different than the way he or she responds to items later in the test, as fatigue and practice effects come into play. If items are arranged as they are in the CDI, it would seem necessary to adjust in some fashion for these effects. The usual approach is to avoid the problem by presenting items from different scales in rotation throughout the test. The CDI is scored on the basis

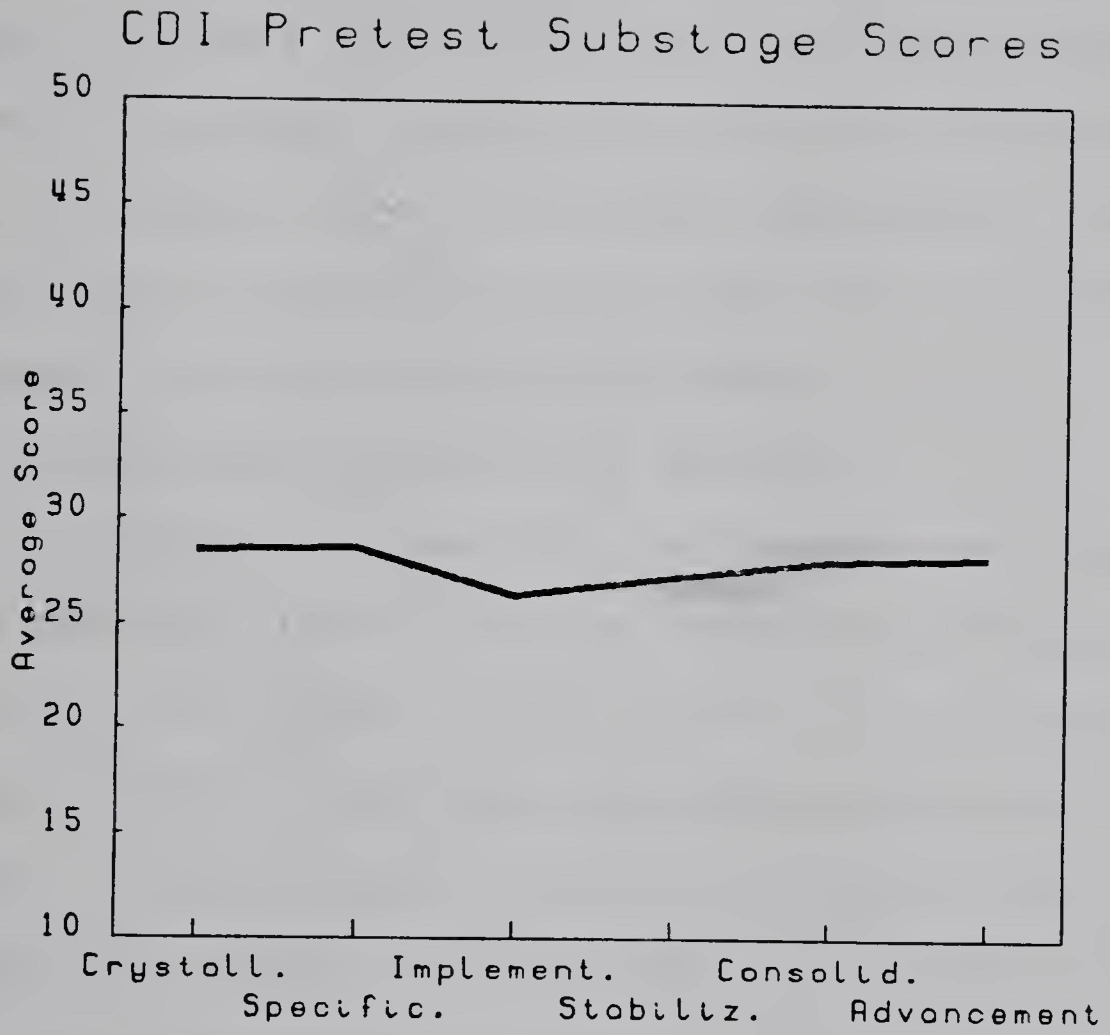
of raw response totals, with no use of norms or weighting.

Another design problem that became evident from the comments of subjects during testing was that many of the items are ambiguous to people at certain stages of career development. Subjects who were currently employed, but in jobs that they regarded only as interim sources of income rather than as career choices, found some items referring to their job to be ambiguous. An examination of the items indicated that to fit Super's theory, the items should be interpreted as referring to an ideal future career choice, rather than the current job. The instructions do not make this clear.

According to Super's theory, a person will pass through his stages in order. In terms of the CDI, this means that the Lifestage scores should be monotonically decreasing. The score for each Lifestage or substage should be equal to or less than the score for the preceding Lifestage. Figure 4 shows that this condition does not exist with the CDI Lifestage substage scores, based on the pretest scores of 177 subjects on the Career Development Inventory. The stage scores, based on the sums of the substage scores, necessarily show the same lack of pattern, with an Exploration Lifestage mean of 83.4 and an Establishment Lifestage mean of 83.4 as well.

Because the comparison group was tested twice with the CDI without any intervening treatment, their scores form a conventional test-retest reliability or stability check.

Figure 4


CDI Pretest Substage Scores
Average Score
50
45
40
35
30
25
20
15
10
Crystall.
Specific.
Implement.
Stabiliz.
Consolid.
Advancement

Full pretest and follow-up scores are available for only 19 subjects. (One subject completed the first 20 items before giving up in, one supposes, disgust, so for two of the subscales, 20 subjects were available.) Not one of the eight Lifestage scores (six substages, two stages) had significant correlations over the test-retest interval. Three of the correlations were negative. The largest correlation was .363, for the Consolidation substage of the Establishment stage. The small sample involved indicates caution in interpreting these results, but they are not promising.

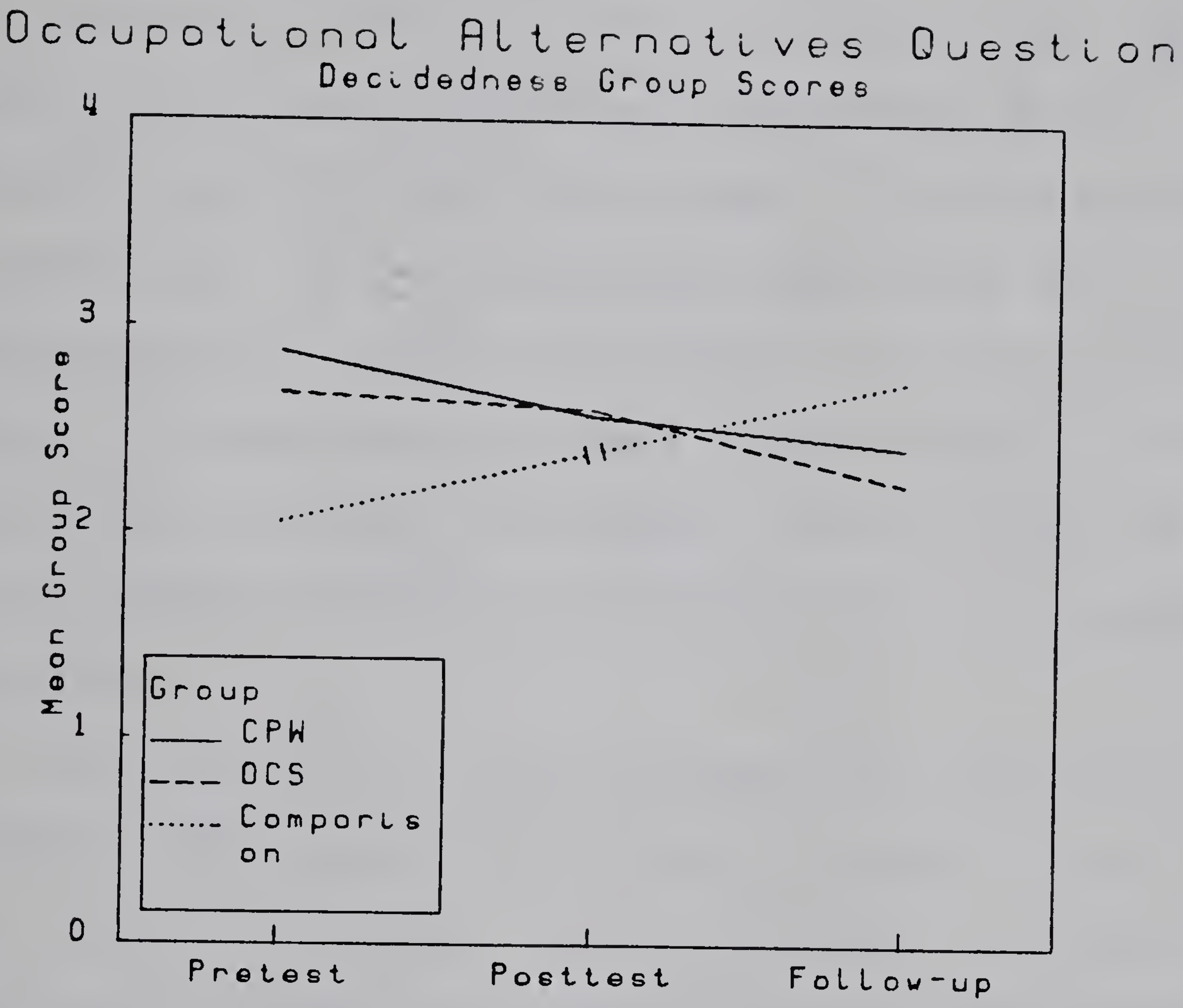
In summary, then, the Career Development Inventory shows flaws in design, poor reliability, and ineffectiveness in measuring adult career development.

The Occupational Alternatives Question

In contrast to the CDI, the Occupational Alternatives Question (OAQ) is very simple, consisting of only two questions. Yet Slaney (1980) found it to be a worthy measure. Slaney's scoring places the respondents into four groups, as described in Chapter 4 of this study. The more decided the subject is, the higher he or she is ranked (and thus, the lower the group number). As Figure 5 shows, the average group scores do have an upwards trend (lower numbers) for the active treatment groups, but not for the comparison group. This shows some promise for this measure, but it was not effective in this study in distinguishing between the treatment and non-treatment groups.

For this study, the OAQ was also scored by counting the

Figure 5


Occupational Alternatives Question
Decidedness Group Scores
4
3
2
1
0
Mean Group Score
Group
CPW
OCS
Comparison
Pretest
Posttest
Follow-up

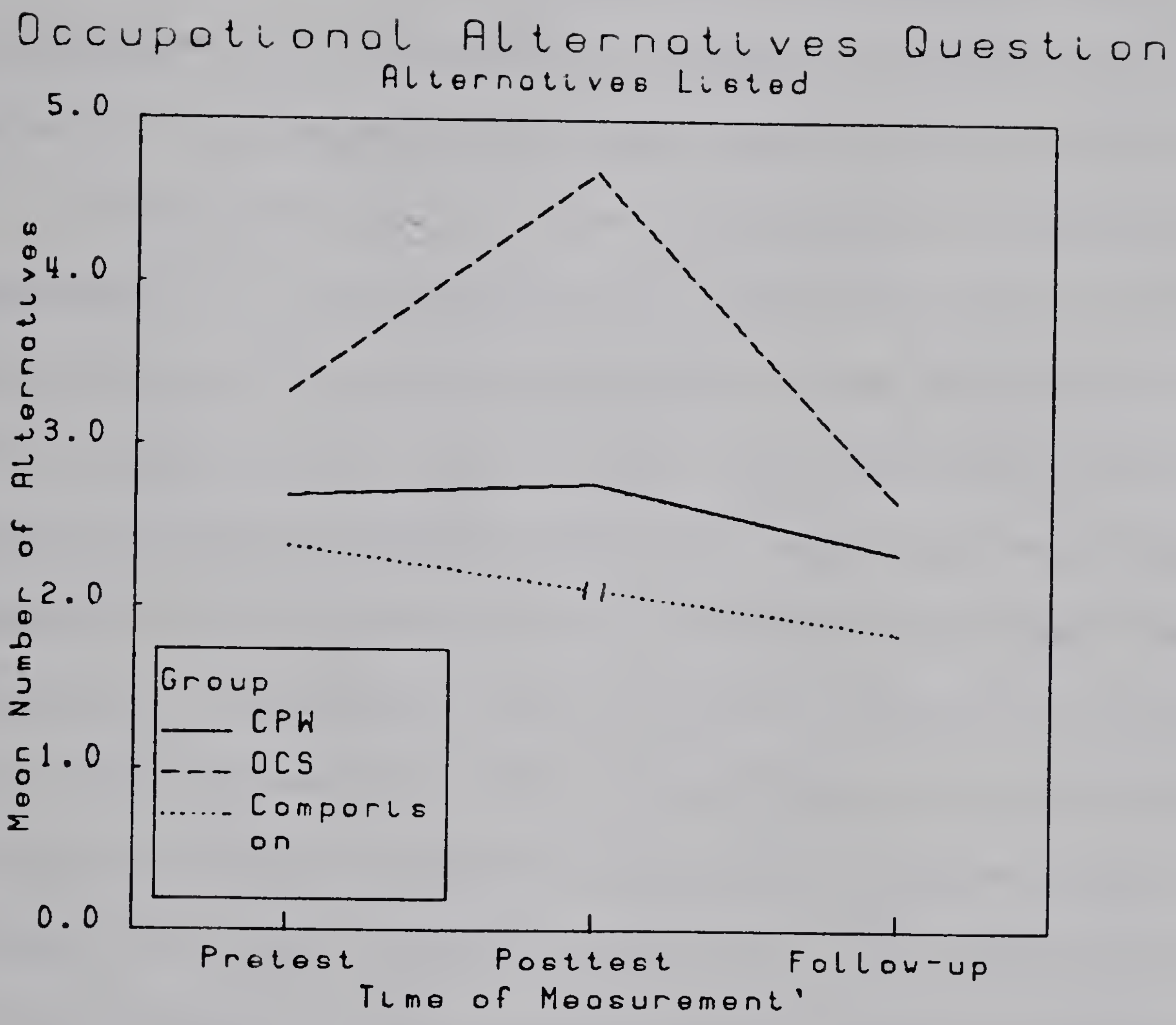
number of alternatives listed. These responses over the three testing times shows a meaningful pattern. As can be seen in Figure 6, for the active treatment groups, the number of alternatives being considered peaked at the posttest measurement, immediately after program completion. This pattern makes sense, as alternatives are generated only as a preliminary step to narrowing them down. The participants do generate numerous alternatives, and then are able to apply research and decision-making skills, presumably gained from the programs, in selecting among the alternatives. The narrowing down takes time, so it is not surprising that the OCS participants list more alternatives after only seven hours of their program than the CPW participants do after nine weeks. The CPW group are likely to have begun the selection process well before program completion.

The OAQ and its scoring scheme have considerable face validity, and provide information a counsellor can build upon. It is unfortunate that no stronger evidence of its usefulness in measuring changes in career development was found.

Career Development Behaviours Checklist

The CDB Checklist was designed for this study in the hope of finding a more reliable approach to the measurement of career development. Since adults are free to act on their career decisions more quickly than students, the evaluation of these programs provided an opportunity to test a

Figure 6


Occupational Alternatives Question
Alternatives Listed
Mean Number of Alternatives
5.0
4.0
3.0
2.0
1.0
0.0
Group
CPW
OCS
Comparison
Pretest
Posttest
Follow-up
Time of Measurement'

measurement approach based on behaviours, rather than attitudes. The behaviours listed were carefully chosen to allow for alternatives to career change as evidence of career development, in line with Hall's ideas of development within an established job and Super's wider definition of career as discussed in Chapter II of this study. It was recognized that some of the alternatives showed greater personal commitment and thus were more revealing of development, and therefore a weighting scheme was developed, based on the judgments of experienced career counsellors.

As was mentioned in the discussion of the analysis of Hypothesis 1, the weighted CDB Checklist scores showed a significant effect for treatment in the step-down analysis, after covarying out the effects for the Checklist score based on the unweighted total of items checked. This result suggests that the behavioural checklist approach has some promise if a more efficient scoring scheme can be devised. In a first attempt at this, the author corrected the weighted scores by subtracting the unweighted score for each subject from the weighted score, but the resulting corrected scores failed to show a significant treatment effect. Further analysis is obviously required before the Checklist will be useful.

Career Needs Survey

The Career Needs Survey, unlike the other instruments, is given to all Career Centre clients as part of the intake procedure. It is included in the Intake Information Form,

which clients complete at their first visit to the Career Centre. Thus it was administered to the active treatment groups at a different time than the other instruments. The comparison group subjects were mailed intake forms along with the other pretest instruments. For the posttest measurement, all groups were mailed all measures in one mailing.

It is possible that the slightly longer time elapsing between pretesting and the follow-up measurement on the needs survey contributed to its effectiveness, or that some kind of interaction effect among the instruments when the needs survey was given simultaneously with the other measures to the comparison group has confounded the results of the analysis of Hypothesis 1, but it is difficult to conceive of any realistic reason to suspect either of these effects. The extra time lapse would have varied from less than a week to up to two months. In some cases, treatment group clients for whom no intake form was on file did complete the form along with the other instruments.

The Career Needs Survey has excellent face validity, representing as it does a list of needs which the Career Centres attempt to meet. It was originally designed to serve both as an aid to counsellors and as a measure of the frequency of different "presenting problems" among clients. Its effectiveness in measuring career development increases its value.

The Evaluation Questionnaire

An obvious way to measure program effectiveness is to ask the participants. In the case of voluntary free self-help programs such as the OCS and CPW, responses can be expected to be honest and relatively free from bias. On a seven-point scale on which "1" was labelled "Not at all helpful," "4" represented "moderately helpful," and "7" indicated "extremely helpful," OCS and CPW participants typically gave positive responses, averaging between "5" and "6" except for one scale which rated slightly less (Figure 3). Clients' responses on this measure, however, were unrelated to their success as judged by reduction in expressed needs (Hypothesis 11). Either clients' perceptions of helpfulness are based on something rather different than reduction in perceived needs or the program conclusion is too early for them to make informed judgments. When asked on the follow-up questionnaire to rate on a five-point scale how satisfied they were with the program they had taken, clients gave ratings which correlated significantly with their earlier rating of overall helpfulness on the Evaluation Questionnaire (r = .302, N = 45, $p < .05$). However, the follow-up ratings of program satisfaction were unrelated to program success as measured by the need change criterion. A t-test with program satisfaction rating as the dependent variable and success category as the independent variable gave a t of -0.70 (N = 48, p = .485).

The necessary conclusion seems to be that client

expressed satisfaction and client expressed need reduction are unrelated. The analysis of Hypothesis 1 has shown that client expressed need reduction is related to treatment, and thus has concurrent validity. Of course, the no-treatment group was not asked to rate program satisfaction, so no such information is available about the validity of the Evaluation Questionnaire. It is apparent that this approach to measurement of program success may not be valid. On the other hand, the Career Centres could not continue to function if they failed to give some degree of client satisfaction, particularly as a major source of referrals is satisfied clients.

Instructor Evaluation

The instructors' evaluations of how helpful the program was to each client bore no relationship to either client evaluation or success as measured by the needs reduction criterion (Hypotheses 8 and 9). There is apparently no validity or usefulness to this type of evaluation

Recommendation 2

2. It is recommended that future program evaluations at the Career Centre take advantage of the Career Needs Survey as an evaluation instrument.

Recommendation 3

3. It is recommended that instructors' evaluations of client success not be used for evaluation of Career Centre programs.

Recommendation 4

4. It is recommended that client evaluations of program helpfulness not be used as the sole criterion for evaluation of instructor effectiveness.

C. Design of Career Development Program Evaluations

Although the only effective measure of change in this study was the Career Needs Survey, and that measure was not given immediately following program completion, the analysis of the results for Hypothesis 2 does lend some support to the idea that changes in career development take place between program completion and a point in time three months later.

This empirical evidence along with the theoretical reasons developed earlier suggest that evaluations of career development programs should include long-term follow-ups whenever feasible.

D. Screening of Clients

The analysis of Hypothesis 3 results found no difference between the two active treatment groups on demographic variables. It seems that participants are not sorting themselves by age, sex, employment status, amount of work experience, time since last employed, time since last in school, or level of education. The next question is whether they should be sorted on any of these variables. To answer this question, chi square analyses were performed for

independence of the distributions of each of the demographic variables and group membership, separately for each level of success as defined by the needs reduction criterion. The null hypothesis that no interdependency existed could not be rejected for any of the demographic variables. There is no evidence here, then, that success in either program was related to different demographic characteristics than in the other program.

However, the results for Hypothesis 6 suggest that a difference may exist that is important in streaming clients to one or the other program. When those who completed CPWs were compared with those who did not, students, the unemployed, and those on social assistance were more likely to be dropouts, while homemakers and the part-time employed were less likely. The shorter program may be more suitable for those clients in the higher dropout risk categories. This interpretation assumes that there is some relationship between program completion and success. A chi square analysis of the independence of the distributions of successful vs. unsuccessful clients and completers vs. dropouts (Table 12) shows these distributions are independent (corrected chi square = 0.0, p = 1.000). In other words, dropouts were just as likely to meet the needs reduction criterion for success as those who attended to the very end. It seems that the dropout rate may be no cause for concern. The clients are reasonably capable of judging when they have gained as much as they are likely to from the

Table 12

Crosstabulation of CPW Completion
By Success Status

Status	Completed	Dropped out	Total
Improved	4	10	14
(%)	29	71	
Unimproved	3	9	12
(%)	25	75	
Total	7	19	26
(%)	27	73	

Corrected Chi Square = 0.0 with 1 degree of freedom (p = 1.00).

(Improved: participants reducing career needs by three or more)

(Unimproved: participants reducing career needs by two or less)

(Completed: attended at least one of last three classes)

(Dropped out: did not attend any of last three classes)

program. Another interpretation could be that the last part of the program has no effect on reducing perceived needs.

The analysis of the results for Hypothesis 5 indicates that none of the measures of career development given as pretests distinguish between the completers and noncompleters. Both groups enter the CPW with similar needs. The Hypothesis 10 results indicate that pretest career development measures fail to show differences between those who will succeed and those who will not. These two sets of results suggest that there is no reason for selecting clients on the basis of measures of career development.

The results for Hypothesis 7 indicate that demographic characteristics also have little to do with program success. Only time since last in school was related to success. It seems likely that clients more used to a classroom environment and having appropriate work habits gain more from the programs. Comments in the instructor interviews support this interpretation.

Recommendation 5

5. It is recommended that no attempt be made to direct clients to one program or the other on the basis of any of the demographic variables measured by the intake form, or any of the measures of career development used in this study.

Recommendation 6

6. It is recommended that counsellors alert clients to the fact that the programs seem somewhat more suitable for

those with more recent school experience.

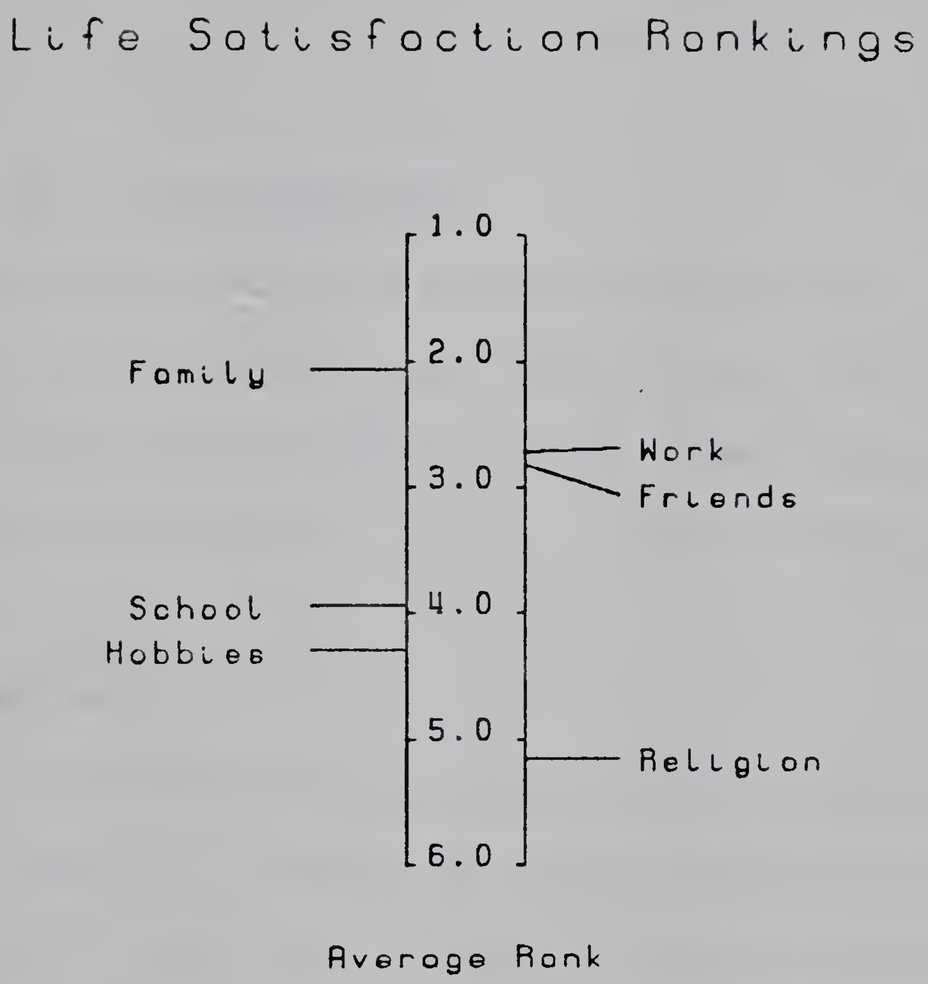
E. Work Importance and Career Development

The analysis of the results for Hypothesis 12 indicates that work importance is unconnected to program success as measured by the needs reduction criterion. Perhaps the range of work importance is not great enough in the subjects tested. However, only about half the clients rated work as the first or second most important source of life satisfaction. One would have expected a higher rating among those who choose to attend career development programs. Figure 7 shows the average ratings given to the various sources of life satisfaction.

These results may be interpreted to show that the centrality of work is always sufficiently high that variations in its relative importance to individuals are not significant. Thus theories such as Holland's, Hall's, and Super's that assume work is important to everyone's self-concept are on safe ground.

A different interpretation within the context of this study would be that the variation in work importance within the subjects accounts for the ineffectiveness of the career development measures. From this point of view one would say that most of the measures depend on the subject rating work as central, and that the needs expressed on the Career Needs survey do not share this problem because the relative importance of the needs in the subject's life does not

Figure 7


Life Satisfaction Rankings
1.0
2.0
3.0
4.0
5.0
6.0
Family
School
Hobbies
Work
Friends
Religion
Average Rank

affect responses to the survey. If this interpretation were correct, one would have expected the analysis of Hypothesis 13 results to have shown a significant difference between the work important group and the work unimportant group within the treatment groups on changes in career development as measured by the CDI, CDB Checklist, or OAQ. However, the null hypothesis was not rejected for Hypothesis 13, and this interpretation is unlikely to be correct.

F. Use of Aptitude Measures

The analysis of the results of Hypothesis 14, as discussed in Chapter V, show that the ability to estimate one's aptitudes accurately is rare. Some clients will need accurate aptitude information, but may otherwise prefer the OCS.

Recommendation 7

7. It is recommended that OCS participants for whom aptitude testing is likely to be valuable be given the opportunity to take the GATB before attending an OCS.

G. Program Length

The instructor interviews indicated that the last three sessions of the Career Planning Workshop seemed to slow down, as students lost momentum. The earlier discussion regarding dropouts indicated that these final sessions do not seem to contribute to program success as measured by the needs reduction criterion. An examination of CPW attendance

records show a marked decrease in attendance after the sixth session. The message seems clear.

Recommendation 8

8. It is recommended that the CPW be reduced in length to six sessions.

H. Limitations of the Study

It was not possible to perform a thorough cost-benefit analysis in this evaluation because of the difficulty in quantifying the benefits accruing to the clients. As both programs produce benefits, and it seems likely that the clientele for the programs differs, a cost-benefit analysis would not be useful.

Another limitation is the short term of the follow-up. A longer follow-up, over a time lapse of one or more years, could produce data of considerable value.

It is unfortunate that the Career Needs Survey was not given at the conclusion of each of the programs. Because this was not done, it was not possible to determine at what point the reduction in needs was perceived.

I. Suggestions for Further Research

The measurement of career development is still a difficult problem in the path of research in adult career development. The promise shown by the measure based on behaviours indicates that this approach could benefit from further research. Another approach that lacks fully

developed instruments at this time is the concept of levels of cognitive development as suggested by Knefelkamp and Slepitza (1978).

The great disparity among client self-evaluation, instructor evaluation, and evaluation on the basis of the needs survey suggests that research into the basis of client and instructor judgments of program success may reveal processes of interest to psychometricians and program evaluators and may lead to design of more effective approaches to evaluation of program effectiveness.

As the discussion in Chapter V indicates, the circumstances in which accurate knowledge of aptitudes is required for successful career development are another area requiring investigation. It is not clear how strong the relationship is between particular aptitudes and either job satisfaction or job competence.

The importance of the centrality of work to an individual's self-concept remains an unsettled question. It is apparent from the results of this study that work is not central for all people, but to what extent this affects the applicability of such theories as those of Super and Holland is not clear. In this study, there was no apparent relationship between work importance and program success.

J. Summary List of Recommendations

1. It is recommended that both the Career Planning Workshops and the Occupational Choice Seminars continue to be offered.

2. It is recommended that future program evaluations at the Career Centre take advantage of the Career Needs Survey as an evaluation instrument.

3. It is recommended that instructors' evaluations of client success not be used for evaluation of Career Centre programs.

4. It is recommended that client evaluations of program helpfulness not be used as the sole criterion for evaluation of instructor effectiveness.

5. It is recommended that no attempt be made to direct clients to one program or the other on the basis of any of the demographic variables measured by the intake form, or any of the measures of career development used in this study.

6. It is recommended that counsellors alert clients to the fact that the programs seem somewhat more suitable for those with more recent school experience.

7. It is recommended that OCS participants for whom aptitude testing is likely to be valuable be given the opportunity to take the GATB before attending an OCS.

8. It is recommended that the CPW be reduced in length to six sessions.

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Appendix A

Alberta
Career Centre

CAREER PLANNING WORKBOOK

JUNE 1981

Alberta
ADVANCED EDUCATION
AND MANPOWER

CAREER PLANNING WORKBOOK

SESSION I

Objectives

1. To hear an overview of the course
2. To define terms required for this course
3. To discuss and become familiar with the decision making model
4. To hear guest speakers describe their careers and relate their comments to career planning

Activities

1. Overview of the course
   This course consists of 3 sections
   a) Gathering self-information: 3 sessions
   b) Gathering occupational information: 2 sessions
   c) Planning: 1 session
2. Terminology
   For clarity in group discussions your instructor will discuss with you the definitions of "career", "occupation", and "job" as used in this course. You may also refer to page 2 in A Career Planning Guide. Use the space provided below.

   Career

   Occupation

   Job

3. Introduction of the Decision Making Model
   In order to make decisions and then implement them it is useful to follow a model. To construct the model used in this course you must realize that the three main factors to be considered in decision making are
   a) your self
   b) the product (what the decision is about)
   c) the plan (needed to achieve your goal)

   About each of these factors you must know
   a) what you need to know
   b) where you will get that information
   c) how you will use that information

Graphically, the model looks like this.

	Self	Product	Plan
What you need to know			
Where you will get this information			
How you use this information			

4. Using the Decision Making Model
On the following pages you will find space to practice using the decision making model. Your instructor will help you become familiar with it by working through one example (eg. buying a car) with your group.
When using it independently you should
   a) work down the column labelled Self, then down the column labelled Product and finally down the column labelled Plan.
   b) ask yourself questions and write the questions in the appropriate space. For instance, if you were making a decision about a holiday, you might ask (What Do I Need to Know About Self)
      - what kind of weather do I prefer to holiday in
      - how much money do I have to spend
      - how do I prefer to travel
   c) answer the questions on separate sheets of paper.
   Feel free to move back and forth across the model adding questions as you think of them.

DECISION MAKING MODEL

	SELF	PRODUCT:	PLAN
WHAT you need to know			
WHERE you will get information			
HOW you will use it			

5. Kinds of Decisions

Although the focus of this course is on career decision-making, you may find it helpful to think about other kinds of decisions that people have to make. Quite often, in fact, occupational decisions depend on whether or not other decisions have been made.

In the space provided you may wish to
a) add definitions or examples of each kind of definition
or
b) list decisions which you are facing in your life now.

A. Emotional

B. Social

C. Material

D. Physical

E. Occupational

6. Guest speakers

Some guest speakers are going to discuss their careers with you. They will tell you something about the education and training they took. They will tell you a lot about their work -- what they did, who they worked for, and so on. They will also tell you about their life outside of work. For example, they will tell you something about their family activities, their leisure activities, as well as their professional and volunteer activities.

As you listen to each speaker's "story", you should try to determine a number of things:
1) what the critical decision points were in their lives, e.g., leaving school, getting married, moving, etc.
2) what kinds of decisions they had to make,e.g., choosing a school in which to take training, choosing a job, choosing to stay at home and raise a family, etc.
3) what seemed most important to them at the time they made each of their decisions, e.g., security, freedom, love, adventure, etc.
4) the approximate order in which they made their decisions, e.g., choosing an occupation and later choosing a way of preparing for it, getting married and later deciding to take a job, etc.
5) how their decisions were related to one another, e.g., the decision to leave school later affected their choice of jobs, etc.

HOMEWORK

1. Read Chapter One and Three in A Career Planning Guide.
2. Practice using the decision making model by working through a decision on the paper provided in the workbook.
3. Read Chapter Two in A Career Planning Guide.
4. Do the following exercise: What Satisfactions Do You Expect From Work.

DECISION MAKING MODEL

	SELF	PRODUCT:	PLAN
WHAT you need to know			
WHERE you will get information			
HOW you will use it			

WHAT SATISFACTIONS DO YOU EXPECT FROM WORK?

A list of the satisfactions people often seek in their jobs or as a result of their jobs is given below. Some of these satisfactions are very important to some people but unimportant to others. Which ones are most important to you?

Place a check (✓) in the column that best describes your feelings. When you have completed the list, write down the 5 work satisfactions that are of greatest importance to you. If some of the satisfactions you expect from work are not given here, include them on your final list.

I WOULD LIKE WORK IN WHICH I WILL...	Very Important	Mildly Important	Not Important
1. have a chance to be of some use to other people.			
2. make beautiful things and add to the beauty of the world.			
3. invent new things, design new products or develop new ideas.			
4. have a chance to think for myself and learn how and why things work.			
5. get a feeling of accomplishment in doing a job well.			
6. obtain status and respect.			
7. plan and lay out work for others to do.			
8. earn a good salary and satisfy my material wants.			
9. feel certain about having a job, even in times of high unemployment.			
10. be in pleasant surroundings -- not too hot, cold, noisy, dusty, etc.			
11. be supervised by someone who is fair and with whom I can get along.			
12. be with other people whom I like and get to know them.			

I WOULD LIKE WORK IN WHICH I WILL.........	Very Important	Mildly Important	Not Important
13. be permitted to lead the kind of life I choose and be the type of person I wish to be.	____	____	____
14. have a chance to do a variety of things.	____	____	____
15. ____________	____	____	____
16. ____________	____	____	____
17. ____________	____	____	____
18. ____________	____	____	____

SATISFACTIONS I EXPECT FROM WORK IN ORDER OF THEIR IMPORTANCE TO ME:

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________

SESSION II

Objectives

1. To identify steps in gathering self-information as
    a) what you need to know
    b) where you will get that information
    c) how you will use it
2. To begin gathering self-information by doing various exercises

Activities

1. Review the decision-making model with your group and instructor
2. Preparing to gather self-information
   In order to gather good self-information, you must first know what questions to ask. The following exercises should help you develop a list of questions you'll want to ask (and answer) about yourself. Record the questions on the page, "Gathering Self Information" in your workbook. Add more pages if necessary.

Exercise A: Brainstorming

In a large or small group try to think of what you should know about yourself before choosing an occupation. Write both your questions and the questions other people asked (that are relevant to you) in the workbook.
Examples of questions are:
what activities do I like to do
am I willing to move
how much money would I like to make

Exercise B: Horoscopes

Read your horoscope. Does it raise any questions? If you think the answers to these questions could be valuable, record the questions on your page.

Exercise C: Monographs

Read the monograph in your workbook.
Do the issues raised in the occupational description alert you to questions you should ask yourself?
e.g. would I like being part of a team
how long would I be prepared to go to school

Exercise D: Personal Inventory

Following the directions given at the end of this section, complete the personal inventory and have it ready for Session IV.

Exercise E: Roles Analysis

Following the directions of your instructor, first list the 10 roles that are most important in your life now. Beside each note any satisfactions you get from this role. Then try to think ahead 5-10 years and write down the roles which you predict will be part of your life. Again try to think of the satisfactions you will get or that you would like to obtain in the future.

ROLES	SATISFACTIONS I OBTAIN FROM THESE ROLES

ROLES	SATISFACTIONS I EXPECT IN THE FUTURE

Exercise F: What Satisfactions Do You Expect From Work

Review this exercise. Be sure you can answer the question, "What motivates me to work?"

HOMEWORK

1. Read Chapters Four and Five in A Career Planning Guide.
2. Complete the Personal Inventory for Session III.
3. Now that you have a list of questions you need to ask about yourself, try to provide the answers. Record the answers on separate sheets of paper and insert them in your workbook.

GATHERING SELF INFORMATION

	SELF	OCCUPATION	PLAN
What you need to know			
Where you will get information			
How you will use it	- to form a clear picture of yourself, what you need/want from an occupation - to choose occupations which will satisfy needs/wants indicated by self information - to build an evaluation form		

THE STARS AND YOUR WORK FUTURE

ARIES (March 21 - April 20). Work which requires lots of mental and physical activity and a chance to be creative appeals to Arians. They are self-starters. They also like to manage, supervise and direct others, but they have to be careful not to appear too bossy when they are giving orders. Because of their initiative and internal drive, Arians make successful innovators and entrepreneurs. But they should be warned. Their initial enthusiasm may slacken and cause their enterprise to fail if they become bored with it. Occupational suggestions include designing merchandise, engineering, creating fashionable clothes and hair styles and modelling them, selling, decorating, landscape design, architecture, and jobs in radio and television which require "get up and go"!

TAURUS (April 21 - May 21). Security is the prime motivation of Taureans. Many born under this sign prefer unexciting and even boring jobs, as long as they are well paid. They also like to work in a pleasant physical and social environment, doing things that don't require much physical activity. Perhaps by conserving their energy, Taureans are able to project a sense of well-being to others, a power which makes them excellent physiotherapists, nurses, chiropractors, manicurists, and veterinarians. Their minds make them good accountants, bank tellers and handlers of money. And because many have good voices, they often make excellent telephone operators and receptionists. Taureans should be able to find satisfying careers in banking; in retail sales for specialties such as jewellery, dresses, flowers, musical instruments and various luxury items; in real estate, stock broking and investments; in work as beauticians and cosmeticians; in restaurants and catering; and in farming.

GEMINI (May 22 - June 21). People born under the sign of the twins need the dual stimuli of variety and change. They are ambitious, but mobility and the opportunity to see and learn new things are their guiding lights. Geminians often use one job as a means of getting a better one, and they may even work at two jobs at once. Not for them is the long-term, secure job with a safe pension at the end. Variety and mobility is provided for a Geminian in all kinds of jobs which involve travel or communications: as salesperson; travel consultant; truck or bus driver; member of an airline, train or steamship crew; operator of telecommunications systems. Other job possibilities are clerk, secretary, typist, actor or entertainer, teacher, demonstrator, journalist, broadcaster, disc jockey, researcher, opinion surveyor, etc.

CANCER (June 22 - July 23). Cancerians take pride in the belief that they understand public needs. They derive great satisfaction in life from feeling that they are reaching out and serving the public around them. Jobs which give a good "public image" are excellent for Cancerians: in orphan and child care, nursing, taking care of the aged and crippled, family planning and pre-natal clinics, and in other social services. In addition, because they can feel the pulse of the public, they make good politicians and popular entertainers as actors and actresses, singers, and writers of fiction or popular literature for the newspapers and magazines. Knowing what the public wants also makes them good shopkeepers and keepers of restaurants with the "right" menu and the "right" atmosphere to attract people. A "water connection" for people born under this sign makes them suitable for jobs involving liquids: at dairies, swimming pools and water resorts, in laundries, breweries, distilleries and chemical plants, and as bartenders.

LEO (July 24 - August 23). Leos are "executive types". They are very capable of selling themselves and operating effectively at high levels. They also make good managers, since they are able to grasp the overall nature of problems, give clear directions to subordinates, and play the "senior" role effectively. Leos do well in the luxury trades, in banking, in the top levels of show business, in the public service and in creative work, where good social connections may be more important than what they know. Their self-confidence and good ability to organize will make them successful stock brokers, high level salespeople, and designers of clothes, jewellery, theatre and opera sets, and window displays. Leos also make good arrangers and consultants for exhibitions, beauty contests and fairs, head waiters and head waitresses, receptionists, stewards and stewardesses, hosts and hostesses, models, demonstrators, bingo callers and circus performers.

VIRGO (August 24 - September 23). Virgoans have an interesting combination of characteristics. Because they have good finger dexterity, they like to do work that is precise, exact, and fine even if it becomes routine and tedious. But they also like to serve others. They are careful, conscientious workers with a high sense of responsibility. Virgoans gain satisfaction from research, technical instruction, teaching, programming computers, running precision machinery and dealing with precision instruments, veterinary work, and in dressmaking, nursing, writing manuals and instructional materials, craftwork and the skilled manual trades. Their desire to serve others also makes them good dieticians, beauticians, hairdressers, masseurs and masseuses, careers advisers, personnel officers, librarians, and workers in all kinds of clinics and hospitals. Virgoans are also effective at managing small shops, working as publicity agents, and serving in the news media as writers, reporters, editors and production personnel.

LIBRA (September 24 - October 23). People born under this sign require a good working environment and pleasant colleagues. Most Librans have considerable charm and easy social graces, and they dislike crudity, dirty stories, bad language and embarrassing situations. Good relationships with other people are important to Librans, and most Libran girls put marriage higher on their scale of values than a job. They want to be loved. With good tact, good judgement, and a balanced ability to see both sides in an argument, Librans are capable counsellors, especially in dealing with interpersonal problems. Sometimes they are competent in mathematics and work which requires precision. With these characteristics, a Libran will probably do well in office jobs as a secretary, receptionist, personal assistant, accountant, or statistician; in artistic work as an interior decorator, designer, artist, florist, or fashion editor; in entertaining as a skater, ballet dancer, actor or actress; and as a marriage counsellor, escort, model, architect, or lawyer.

SCORPIO (October 24 - November 22). Work presents a challenge to Scorpios. Job satisfaction is more important than pay. But because they work so hard, they are usually highly paid as well. Scorpios put their hearts into their work. They drive themselves. They also drive others to do the best job possible. They want something to fight for, a difficulty to be overcome, a problem to be solved. Most Scorpios prefer to work independently. They may accept general directions from superiors, but they want to work out the details by themselves. They are ready to accept the consequences of their work: either praise or blame. With keen powers of observation, a strong personality, a quiet manner and a natural reticence about themselves, they easily gain the confidence of others. The Scorpio sign reveals also an affinity with sex and death. Scorpios can use these characteristics in chemical and mechanical engineering, in medicine as a doctor, nurse or surgeon, or in other scientific jobs; in investigations of any kind as an insurance adjuster, police detective or secret agent; in high-level entertainment; and in statistical and scientific research.

SAGITTARIUS (November 23 - December 21). To talk freely, to keep active, especially outside in the open air, and to meet friendly and like-minded people in changing situations are necessities for most Sagittarians. They require work goals which motivate them. Routine jobs just do not stimulate their best efforts. People born under this sign enjoy work in advanced education, religion and publishing. Their need for activity also leads them naturally into competitive sports, sailing, riding and exploration. Outdoor work of any kind challenges Sagittarians: environmental control and conservation, wild life study, work in national parks and zoos, and recreational pursuits. Naturally talkative and able to express themselves well, they make good teachers, lecturers, salesmen, clergymen, entertainers and politicians. Other related jobs may be in journalism or publishing as an author, reporter, editor, interviewer or broadcaster; in active work with animals, especially with horses, as a trainer, rider or groom; in work with other languages and cultures as an anthropologist, interpreter, linguist, travel courier or consultant, crew person on a ship or plane, or member of an adventure expedition.

CAPRICORN (December 22 - January 20). Capricorns are ambitious. Capricorns are also hard workers who are dependable, reliable and determined to forge ahead on their own merits. Given prospects of promotion or advancement, they are willing to "work up the ladder", even in jobs considered routine and boring. Most Capricorns are an employer's delight. They readily accept responsibility, they are punctual, and they don't jump from one job to another. However, they may be lacking in creativity, and they may resent innovation. Capricorns are conscious of their abilities, and they like to get credit for them. They also like to get credit for their shrewd pragmatism. They make excellent workers in all kinds of business and commerce, from salesclerk to manager, and they are found at all levels of government service, both provincial and federal. In addition, Capricorns work successfully in real estate, insurance, manufacturing, and they are good caretakers, security guards, stocktakers and stock keepers, and workers with records and files. With orderly minds and a penchant for collecting, they may also make good dealers in stamps, coins, antiques, etc.

AQUARIUS (January 21 - February 19). People born under this sign are likely to be modern-minded and up-to-date, with a flair for mechanical and electronic gadgetry. They tend to be enthusiastic about new political, social and religious ideologies, as well as progressive educational methods. A concern with principles motivates them. Therefore, Aquarians find deep satisfaction in working with others and for good causes. They also make good actors, especially in the modern media. With these characteristics, their best fields are in television and radio drama and advertising, visual education, "nouveau" art, electronics, aviation, and jobs involving public contact. Possible occupations which would be satisfying to Aquarians are: entertaining and broadcasting in various media; producing graphics, writing, and designing materials for advertising and publishing; lecturing; interviewing and conducting consumer surveys and market research; working in community relations, community planning, and local government councils; setting up displays and providing information in museums, art galleries, and public information centres.

PISCES (February 20 - March 20). Pisceans need emotional involvement to be happy in their work. Because of a need for close human relationships, they find satisfaction in jobs where they can provide personal service, such as in catering or hairdressing. They also enjoy jobs where self-sacrifice may be needed for helping others in a religious or social way. For example, they often work in hospitals, social work and correctional and religious institutions. They may deliberately seek employment at a lower level than their capabilities would indicate, and they will be happy even though they know they may earn more in other occupations. A conflict between "the two fishes swimming in opposite directions", the need to get away from it all and at the same time to be involved with others, may cause uncertainty and indecision in choosing their occupations. Change and variety in work may be essential. Pisceans have good latent artistic ability and imagination and a great pool of compassion, understanding and sympathy for others. But they may need to be nagged into full use of their talents. Pisceans should do well in nursing, film-making, entertaining, photography, social welfare services and counselling.

OCCUPATIONAL INFORMATION MONOGRAPH

CARTOGRAPHER

A CARTOGRAPHER is a planner, compiler, and/or draftsman whose job it is to produce a map showing the relationship of ground detail and surface features with those of specialized map data provided by geologists, foresters, geographers, geophysicists, hydrographers, surveyors agriculturalists, and engineers. Cartographers design maps with regard to scale, map projection, purpose, and type. They may be called upon to compile and draw maps of cities, towns, villages, and other areas showing location and identity of roads, communities, commercial or industrial structures and installations, political boundaries, and other features. Cartographers analyze survey data, reference maps, and other records to determine location of such features as primary or secondary roads, overhead power lines, underground pipe lines, oil wells, and railway tracks. They study deeds, leases, statutes, and other legal records to establish boundary lines of cities, townships, counties, districts, regions, and other politically, socially, or economically determined areas.

In this monograph the term cartographer shall apply to one who designs, constructs, and compiles charts and maps at any scale; assembles, evaluates, selects, correlates, and plots data; therefore, creates map originals for printed reproduction; edits and reviews maps for accuracy and quality.

HISTORY AND IMPORTANCE

A study of the historical background of cartography reveals some fascinating facts about maps and their evolution. From the dawn of history people have been interested in maps as a communication medium. The ancient Greeks are primarily responsible for our present system of cartography. They recognized the earth as a sphere, developed our system of longitude and latitude, designed the first map projections, calculated the size of the earth, constructed globes on which the known world was represented, and solved the problem of determining latitude by astronomic observation. Roman methods of land survey, discovered many centuries ago in Carthage, still form the basis of the Canadian township subdivision of lands in the western provinces and in northern sections of Ontario and Quebec.

Maps are being used increasingly as aids to marine and air navigation, weather forecasting, town planning, property assessment, traffic study, geology, forestry, education, and geophysics. In addition, maps are utilized in regional economic studies and in atlases.

In Canada maps play an important part in the economy. The federal government operates large cartographic establishments producing many different types of maps. These maps are used for the planning of the Canadian economy and the exploration of many facets of national resources. Private aerial-survey companies produce maps for engineering, economic, assessment, planning, and resources purposes. Most municipalities operate planning boards, roads departments, and public-works offices where a knowledge of mapping is invaluable. Map making in Canada is becoming an ever-expanding field of endeavour employing thousands of men and women. It is estimated that at the present time (1977) there are 8 000 persons employed in Canada in cartography and photogrammetry (the compiling of map data from aerial photography). Most of the activity in cartography is found in the larger urban areas.

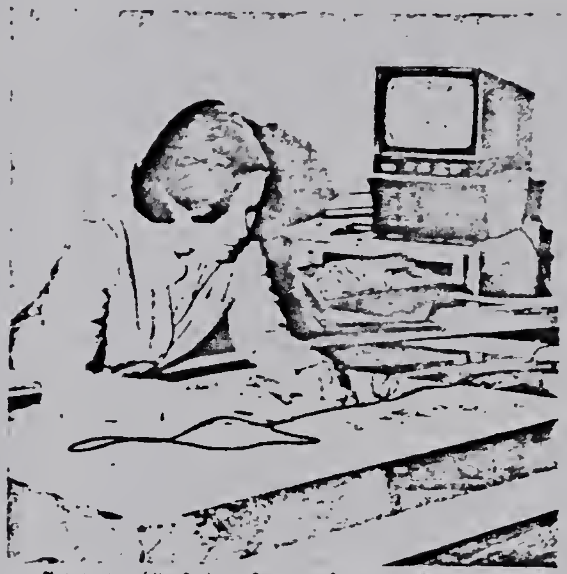

Photo courtesy of Map Production Directorate, Surveys and Mapping Branch, Ottawa

A cartographer using a cursor to digitize or record electronically the co-ordinates of. the location of features on the map. The data gathered are encoded by computer for storage on magnetic tapes or discs.

NATURE OF THE WORK

Cartography is the science of preparing all types of maps, charts, and diagrams, which includes topographic, thematic, and resource maps, and any natural and artificial features above or below the earth's surface; and involves any or all operations from the measurement of computations of the data intended for use in a particular map, chart, or diagram, to the final printing, publication, and distribution of the map.

Cartographers are concerned with the physical compilation and production of a map. Rather than being users of maps, they are intimately concerned with the art and the science of map making. Because of their training and the nature of the

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CCDO CLASSIFICATION
Occupations in Natural Sciences, Engineering and Mathematics

01-286

work, cartographers become specialists to whom the geographer, scientist, geologist, hydrographer, soil and forestry expert, surveyor, engineer, and planner turn in order to have their ideas expressed in the best cartographic sense.

Because it is used as a base for the placement of information advanced by the various sciences, a map may be more than a picture of the earth's surface. Cartographers thus are presented with the problem of designing a map for the presentation of scientific information. It is in this context that cartographers often become conversant with the several professions that employ their talents.

Cartographers are concerned chiefly with the gathering of source material, the choice of correct scale, the selection of a suitable map projection, the study of existing surveys and maps, the design and presentation of the map, and the selection of the best compilation and production methods.

A mapping establishment may employ surveyors, photogrammetrists, cartographers, and photographic lab technicians, in addition to secretarial and accounting services. Private and government mapping agencies differ in the structuring of the various departments, because of the type of map or chart they produce. For instance, a government agency specializing in the production of a hydrographic chart does not house the same cluster of departments found in a private mapping company, such as an aerial-survey company. Government mapping agencies are more likely to draw upon the resources of other departments within the total federal or provincial mapping capability, whereas an aerial-survey company houses a complete range of support services, such as resource, survey, topographic compilation, drafting, and reproduction departments. Of course, the private and the government mapping agencies offer complementary mapping services and draw upon each other's resources and services. Complementary to private mapping concerns are government mapping departments or agencies, such as Natural Resources, Geological Survey, Hydrographic Survey, Agriculture, Atlas, Aeronautical Charts, Transportation, Highways, Parks, and Statistics, each of which specialize in the production of a particular map or chart.

Cartographers must possess highly developed drafting skills and, through experience, gain an understanding of map compilation, design and layout. The various operations in the compilation or drafting of a map and chart require meticulous drafting skills and close attention to detail. Cartographers also need a sound theoretical knowledge of mapping processes. Many mapping agencies have installed computers, electronic drafting plotters, and cathode-ray display screens (CRT). These recent cartographic systems are providing cartographers with new tools to make charts and maps. Cartographers and computer programmers now form a team in the mapping process.

The cartographer has a tremendous opportunity to learn about the fascinating world of computers and how they may be adapted to map production. The photograph shows the digitizing process. The digitizing function replaces conventional drafting but not the compilation of the chart from which the finished chart will be made. The computer has replaced not the cartographer but the means by which the chart or map will be produced, and placed another tool in the hands of the cartographer.

Much of the work being done in computer-assisted mapping methods is experimental. Nonetheless a number of phases of the production of maps and charts are being produced by this new method and the relationship of the computer to the cartographer can be expected to become stronger.

The stages of production of a map by derived compilation methods are as follows:

(a) *Design of the map*
The map's design includes the selection of all information to be shown on the map such as the selection of scale, selection of a map projection, selection of compilation method, design of notes, titles, and borders. At this stage, a mock-up of the map is made for purposes of positioning of the various elements of the map and showing how the finished map will look.

(b) *Gathering of source information*
Source information, such as existing maps and surveys, is gathered from which the new map may be planned and produced. A study of the source information is made for names, topographic and special map requirements, such as forestry or geological information, and other data as required.

(c) *Compilation of base manuscript*
The compilation of the base manuscript requires the precise locating and plotting of grid lines, topographic map elements, such as contour lines, and all cultural features (i.e., roads, buildings, etc.). The plotting of such mapping information is done with regard to the scale and normal specification requirements of the particular map type. Overlays containing the correct location or names of map features, road classification overlays, and such other overlays as forestry or geology information, also are provided with the compiled manuscript sheet.

(d) *Fair drawing or scribing of the finished map*
In the fair drawing stage a "blue key," containing all compiled information, is printed on a sheet of "scribecoat" from which all map detail is scribed or drawn in ink on a specially coated plastic film. In addition to the scribed "topographic" information, separate overlays for supplementary data, such as notes and titles, are adjusted or "registered" to the individual drawing or scribe sheets.

(e) *Reproduction of the map*
The reproduction of the finished map requires specialists in the printing processes. However, the cartographer should possess a good knowledge of printing and photography to follow through on the map reproduction from the point of view of both design and of compilation and fair drawing of the map.

The cartographer must be very careful that the map detail, such as lines and symbols, is clear, sharp, and precise. If the map is in one colour, all map detail is drawn on one sheet. If the map is in various colours, many different overlays and negatives must be drawn or scribed, one for each colour.

The colour-separation technique for producing a colour map is complex and requires considerable knowledge of many technical processes – graphic arts, lithography, and photographic processing, as well as cartographic application. Critical editing and checking of manuscript and finished drawing to ensure accuracy in specification and quality are important tasks in cartography. The process of making a map is a long and arduous process calling for a high degree of patience and skill. The map editors must ensure that standards are adhered to.

WORKING CONDITIONS

Cartographic offices are interesting places to work because of the many skills employed under one roof. Most of the work is done within the office; however, occasional opportunities for field trips do occur.

Much of the work is done at a drafting table, plotting machine, or desk. Offices are sanitary, clean, and brightly lit. Much liaison is required between drawing office, topographic section, survey office, and photographic department. The company salesperson often brings in clients to see the work in progress. The beginning map maker will find opportunity to discuss mapping problems with salespeople, clients, and co-workers.

Much of the work is done in the company of fellow

employees within individual departments. Generally, people working in mapping seem, from time to time, to engage in spirited discussions. These help to relieve the strict attention required in this type of work.

At the time of writing there are no organizations, such as unions, to provide a bargaining agency for salaries. However, federal government and provincial government employees are represented by collective bargaining organizations, such as the Public Service Alliance of Canada.

Cartographers can join many professional organizations where problems of general interest are discussed and an exchange of technical information takes place. Professional organizations in cartography are becoming increasingly important and are gaining recognition by government and industry.

Cartographers generally work eight hours a day on a five-day-week basis.

The following organizations are technical societies that welcome cartographers as full members:

Ontario Institute of Chartered Cartographers
The Canadian Institute of Surveying
The American Society of Photogrammetry
The American Congress of Surveying and Mapping

The International Cartographic Association distinguished the following levels of cartography:

1. Professors, research workers, and engineers
2. Head cartographers, cartographical engineers, and heads of manufacturing departments
3. Cartographers
4. Cartographic draftsmen
5. Map custodians and keepers of records

In Canada these terms equate with managers, engineers, geographers, cartographers, technicians, technologists, librarians, professors and teachers of cartography.

QUALIFICATIONS NECESSARY FOR ENTRY AND SUCCESS

Much of the cartographer's work is performed indoors and requires intense concentration. Cartography is a demanding occupation that requires good eyesight. Aptitude in drawing is an asset. The prospective cartographer should possess a high degree of patience and the ability to get along with others. Since cartography requires long hours over a drafting or plotting table, he or she should possess an even temperament and a high degree of perfectionism.

Because of the fine work involved, good eyesight is important. However, no undue strain on the eyes need occur provided attention is paid to proper lighting and working conditions. Cartographers who require glasses should get these at once. Eyestrain need not be of special concern to cartographers since the same problem must be faced by office workers, banking officials, and those in other drafting occupations.

Cartographers are constantly placed in the position of working with others. Under these conditions, such personality traits as patience, determination, and a friendly disposition prove advantageous in solving problems.

All age groups of both sexes are employed in this field and advancement is available to those with proven ability. Women are employed in fairly large numbers in cartography although men outnumber women in all job classifications.

PREPARATION NEEDED

A person contemplating cartography as a career should have at least a Grade 12 education. The position or level of employment desired will depend on the individual. Generally in cartography, three levels of employment and responsibility are available – technician, technologist, and management.

Many people do go into cartographic establishments directly from high school; however, management has found on-the-job training to be slow and expensive. In more recent years, it has been increasingly difficult for these workers to compete for job opportunities and career advancement with graduates from Cartography programs at post-secondary schools.

In addition to on-the-job training, courses in Cartography are available at various institutions. The following Canadian universities offer such courses as a related subject in degree programs:

University of New Brunswick, Fredericton, N.B.
Sir George Williams University, Montreal, Que.
McGill University, Montreal, Que.
University of Ottawa, Ottawa, Ont.
Carleton University, Ottawa, Ont.
Queen's University, Kingston, Ont.
University of Toronto, Toronto, Ont.
York University, Toronto, Ont.
University of Waterloo, Waterloo, Ont.
University of Alberta, Edmonton, Alta.
University of British Columbia, Vancouver, B.C.

Université Laval, in Quebec City, offers a graduate degree course in Cartography.

Specific cartographic training at the technician level is offered at the following:

The Nova Scotia Land Survey Institute, Lawrencetown, N.S.

Algonquin College of Applied Arts and Technology, Ottawa, Ont.

Seneca College of Applied Arts and Technology, Willowdale, Ont.

Sir Sandford Fleming College of Applied Arts and Technology, Peterborough, Ont.

Course descriptions and details concerning entrance requirements may be obtained by writing to the registrar of the institution concerned. The cost of university fees would be approximately $750 to $1 000 per year plus living expenses. The cost of technician training would be approximately $350 per year for fees plus living expenses. Undergraduates may obtain part-time summer jobs in government and industry. These jobs pay from $400 to $650 monthly depending on one's training and experience. Summer jobs can last three months and so can provide sufficient earnings to take care of tuition and living expenses. Information regarding assistance loans may be obtained at the individual universities and colleges.

There are no correspondence courses; however, evening programs in Cartography are given at most of the institutions listed previously.

The cartographer requires little in the way of equipment. All equipment and clothing necessary for extended field work are supplied by the employer.

EMPLOYMENT, ADVANCEMENT, OUTLOOK

Entrance into cartography may take the form of on-the-job training. The chief advantage of this is that one learns while being paid; however, the training given is highly specialized and six to eight years may pass before a thorough understanding of cartography is gained.

Mapping in Canada is big business. Millions of dollars are spent by government and private agencies in producing mapping programs for exploration as well as for industrial and

urban growth. Much of the work produced in Canada consists of mapping programs for the developing nations of the world, which often means that travel opportunities exist for personnel outside as well as within Canada. Some universities are establishing cartographic departments for educational and productive purposes.

Almost all municipal government offices require trained personnel who are able to work in the mapping media. Planning boards and public-works departments of governments and municipalities also require cartographers. Provincial governments operate extensive mapping agencies for mining and developmental work. In addition, provincial planning boards work with the municipal planning boards in organizing land development. Provincial governments also operate extensive mapping programs through their Departments of Highways, and of Lands and Forests. Cartographic establishments and aerial-survey companies produce a variety of maps for all purposes – developmental, pictorial, and promotional advertising.

All age groups are employed in the field and advancement is available to those with proven ability. An increasing demand for thoroughly trained personnel now exists owing to increasing complexity and automation.

Cartography covers a wide field and many varied opportunities exist for those who have mastered some basic mapping techniques. As in most occupations, cartography is undergoing rapid change and anyone contemplating cartography as a career field will do well to spend some time investigating this discipline thoroughly.

REMUNERATION

Cartographers enjoy steady employment and salaries generally are in keeping with comparable occupations. Journeymen cartographers with six years' experience may expect to earn up to $16 500 per annum. Graduates from Cartography programs at community colleges may expect to earn up to $9 500 per year on entry into their field.

All cartographic establishments offer normal fringe benefits, such as holidays with pay, sick leave, and pension plans. Workers are salaried, and steady employment is assured because the mapping industry is not beset by such factors as weather or seasonal customer requirements.

ADVANTAGES

Cartographers are in the forefront of planning and development. Without their maps, the planning of Canadian cities and industries would be haphazard indeed. Cartographers are constantly being consulted. Satisfaction is gained through the knowledge that their work, though generally not seen by the public at large, creates immeasurable changes in the way we live.

Occasional field trips create a pleasant diversion from the main task and opportunities exist for travel to distant lands. The cartographer is in a challenging and changing field where techniques and methods in map production are constantly undergoing revision in the interest of speed and economy. Cartography is ready to map the realm of space exploration as it has the newly explored frontiers in the past.

DISADVANTAGES

For those who like a more rigorous outdoor life, the prospect of working on detailed assignments at a drawing board may be a distinct disadvantage. Cartography is demanding work which requires concentration on a specific task. For those engaged in surveying operations, many days are spent away from home, working long hours under conditions that are not as comfortable as those enjoyed by the office worker.

HOW TO GET STARTED TOWARDS THE OCCUPATION

For those who might enjoy working with maps, a keen interest in geography is desirable. Much information in geography courses, such as land form, climatology, and regional geography, has direct application in cartography. Other subjects of value are mathematic, physics, history, and drafting.

Hobbies, such as map reading, photography, drawing, stamp collecting, and map collecting, will provide useful background. Spare-time activities, such as hiking and travel, will provide an appreciation of various land forms and map features. The reading of books on travel, history, and cartography often provides the incentive to take specific training in cartography.

RELATED OCCUPATIONS

Related occupations include photogrammetric compiler or plotter, pilot, aerial navigator, aerial photographer, photographic film processor, hydrographer, programmer, compiler, checker and editor, draftsman, surveyor, photographer, printer, lithographer, typographer, job captain, assistant supervisor, librarian, production manager, and salesperson. These are some of the principal job openings available for those with suitable aptitude and training. For persons who have not successfully completed their training as cartographers, positions may be obtained within the field as junior trainees doing a variety of tasks helpful to the main task of producing a map.

FOR FURTHER INFORMATION

BOOKS:

Birch, T. W. *Maps Topographical and Statistical*. Toronto, Ont.: Oxford University Press, 1966.

Raisz, E. *Principles of Cartography*. Toronto, Ont.: McGraw-Hill Ryerson, 1962.

Thomson, D. W. *Men and Meridians*. Ottawa, Ont.: Queen's Printer, 1966.

PERIODICALS:

Canadian Cartographer (twice yearly), c/o Bernard V. Gutsell, Geography Department, York University, Downsview, Ont.

Canadian Geographer (quarterly). University of Toronto Press, Toronto, Ont.

Canadian Surveyor (five times a year). Canadian Institute of Surveying, 157 McLeod St., Ottawa, Ont. K2P 0Z6.

National Geographic (monthly). National Geographic Society, 17th and M Sts., N.W., Washington, D.C. 20036. U.S.A.

This G.C. Occupational Information Monograph in the present revised edition was prepared by W. J. Lea, Cartography Instructor, Algonquin College of Applied Arts and Technology, Ottawa, Ontario. Edited by C. L. Bedal. Published originally in 1968 and republished in 1974 and 1977 by the Guidance Centre, Faculty of Education, University of Toronto, 1000 Yonge Street, Toronto, Ontario M4W 2K8, Canada, and © 1977 by The Governing Council of the University of Toronto.

YOUR PERSONAL INVENTORY

Before you can make career plans and decisions, you have to "discover yourself". This is the reason for doing a personal inventory. It helps you find out about your interests and preferences. It helps you to find out about the kinds of things you are most capable of doing. It also helps you to find out about the ways you commonly behave.

The information you put together will be used in a number of ways. You will use it when you are trying to determine your life's goals. You will use it when you are searching for occupational possibilities. You will use it when you are evaluating alternatives and deciding. You will also use this information as the basis for planning changes in yourself.

Part One: Your first task is to prepare a list of all the major activities you have undertaken. Analyze each activity by noting what you liked about it, what you didn't like about it and what skills were required to perform the activity. You will find it easier if you use these headings and the format below.

1. Work Experiences (include odd jobs, part-time jobs, regular work for pay, on-the-job training)
2. Hobbies, Sports and Recreational Activities
3. Club and Volunteer Activities
4. Home Activities (include duties, entertainment, etc.)
5. Secondary School Activities (include extra-curricular activities and subjects taken)
6. Post-secondary school or other training

ACTIVITY	LIKED	DISLIKED	SKILLS REQUIRED

Part Two: The self-information you have collected in your personal inventory will be very useful for future occupational decisions. Summarize it by using the following table.

WHAT I WANT FROM WORK	WHAT I DO NOT WANT FROM WORK

SESSION III

Objectives

1. To continue gathering self-information by
    a) looking at homework ie. personal inventory
    b) filling out personal resource sheet
    c) listing and examining constraints (fixed or chosen that may affect occupational choice
    d) using questionnaire to code interests etc. according to C.C.D.O.

Activities

1. Following the instructor's directions examine your personal inventory in class. Have any new questions about yourself come to mind? If so, add them to the list of questions you began in Session II.
2. Following the instructions given do the personal resource sheet.
3. Following the instructions given do the exercise about constraints.
4. Coding interests etc. according to the Canadian Classification and Dictionary of Occupations.

    Since the information in the C.C.D.O. is set up using a particular coding system, it is necessary for you to become familiar with this system to use the dictionaries, the keysort and many other career planning tools.

    Follow the directions on the next few pages and you will see that you are translating your self-information into the C.C.D.O. codes.

HOMEWORK

1. Finish and review the exercises on personal resources and constraints, resolving any contradictions with your personal inventory

2. Read Chapter VI in A Career Planning Guide and finish/review the coding exercises.

PERSONAL RESOURCE SHEET

People who are successful are those who concentrate on their strengths rather than on their weaknesses. If you ask the average person to identify 5 weaknesses, s/he can probably come up with 15; however, if you ask for 5 strengths, s/he will have a difficult time naming 3.

Early childhood messages about bragging or being proud still affect us as adults, and many people find it very difficult to identify their areas of strengths. Concentrating on your weaknesses can never make you strong. Concentrating on your strengths allows you to achieve things that you want and not just avoid the things that you don't want.

The following exercise asks you to identify those things that you have going for you - personal strengths and abilities as well as external resources.

INSTRUCTIONS

1. Under personal strengths, list those things which you believe are positive parts of your personality.

2. Under aptitudes/abilities, refer to personal inventory and then add other abilities that may not have been mentioned eg. second language.
3. Under material resources, list those items you own which have a monetary value as well as any savings, bonds, etc.

4. Under personal support system, name those people who give you encouragement, comfort and support.

5. Under professional support system, consider those with whom you work, or personal friends who encourage you in the area of career.

6. Under education, certification, etc., list all education, courses, programs, etc. that you have taken.

Developed by A. McGill and P. Pitsel for the Alberta Career Centre, 1979.

PERSONAL RESOURCE SHEET
(Things that people have going for them)

1. PERSONAL STRENGTHS

2. APTITUDES/ABILITIES

3. MATERIAL RESOURCES

4. PERSONAL SUPPORT SYSTEM

5. PROFESSIONAL SUPPORT SYSTEM

6. Education/CERTIFICATION/
PREVIOUS EXPERIENCE

CONSTRAINTS

A constraint is anything, internal or external, that may keep you from reaching your goal and may limit too severely your occupational possibilities.

Constraints can be divided into two categories - those that are fixed and those that are chosen. The fixed constraints are those over which you have no control, for example, height, age, sex. Chosen constraints are those that you allow to control you (willingly or unwillingly), for example, where you live, weight, education.

Some problems arise when people label a chosen constraint as a fixed constraint, thereby giving up any chance of modifying or changing the constraints that they effectively keep themselves from doing anything; then they use these constraints as excuses that justify their lack of action.

INSTRUCTIONS

1. In the first column, make a list of the 10 most significant constraints in your life. Constraints may be fixed or chosen. They are limitations or obligations which you experience as having an impact on you.

2. In the middle column, indicate which constraints are fixed, and which are chosen.

3. In the third column, indicate what, if anything, you are doing or might do about each chosen constraint - either to remove it, to modify it or to cope with it.

Developed by A. McGill and P. Pitsel for the Alberta Career Centre, 1979.

CONSTRAINT	FIXED OR CHOSEN		ACTIONS TO REMOVE, MODIFY OR COPE WITH CONSTRAINTS
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Interest Factors:

In this exercise you are going to consider the work activities that you like and dislike. This is the procedure to follow:

Look at the 10 activities listed below and rank them in order from your first choice (best-liked) to your last choice (least-liked). Indicate your order of ranking by placing a 1, 2, or 3, etc. on down to 8, 9, or 10 in the blank space next to the number of each interest factor. Start by choosing your three best-liked and three least-liked choices. Then fill in your other choices.

CODE	RANK	INTEREST IN:
Int. 1		Working with things, numbers and objects (rather than people or animals) including making and repairing things and finding out how things work.
Int. 2		Business contact with people - in things like organizing, interviewing, persuading, selling, giving information and supervising.
Int. 3		Doing the same daily tasks. (Working in routine and organized duties)
Int. 4		Helping other people through your work by doing something which directly helps or gives service to other people.
Int. 5		Work that gives you the respect of others. (Brings you recognition and appreciation from other people).
Int. 6		Working with people and communicating ideas. (Trying to express your ideas or getting them across to other people.)
Int. 7		Doing scientific or technical work. This includes work involving analysis, testing, and creating theories based on facts.
Int. 8		Doing abstract and creative work. (Thinking up new ideas or ways of doing things.)
Int. 9		Working with machines, equipment, and mechanical things, where getting along with people is not very important.
Int. 10		Doing work where you can clearly see the results of your efforts. (e.g. making products or things.)

If you have difficulty, refer to pages 65 - 67 in A Career Planning Guide.

Temperament Factors:

Below is a list of twelve different types of work situations to which people in different occupations must adjust or adapt. Whether it is easy or difficult for you to adjust or adapt to these situations depends on your temperamental qualities. Thus, they are called "temperament factors". Think carefully about what you are like as you do this exercise.

Following the same procedure you used with the Interest Factors, rank order the Temperament Factors listed below. Start by choosing the three easiest situations for you to adjust to, and the three most difficult ones. Then fill in the rest of your choices.

CODE	RANK	SITUATIONS WHICH REQUIRE:
T. 1		Many duties that change often and may require changing to a second activity before you have finished the first one.
T. 2		Duties that are repeated often and regularly (i.e. a regular and uncomplicated routine.)
T. 3		Following exact orders given by someone else, where planning and making decisions on your own are not required.
T. 4		Planning, controlling, and directing projects, and the activities of others.
T. 5		Working in close cooperation with other people, including dealing with people who are customers or clients.
T. 6		Working alone most of the time.
T. 7		Convincing others or influencing their opinions, attitudes, and judgements.
T. 8		Making quick judgements under pressure and performing in risk situations, exhibiting calmness and self control in dangerous conditions.
T. 9		Making decisions based on your own knowledge and observations.
T. 0		Working at tasks involving many facts and figures and judging information against measurable standards.
T. X		Making judgements based on your own feelings or values and helping people put their personal ideas and feelings into words.
T. Y		Doing a lot of precise and accurate work.

If you have any difficulty, refer to pages 68 - 71 in A Career Planning Guide.

Data - People - Things

Every occupation requires that you be involved to some extent with data, people and things. An accountant, for example, works at a high level with data in the form of numbers. Because s/he may also operate machines, like calculators, and advise clients, s/he has some involvement with things and people.

First become familiar with levels at which you may become involved in dealing with data, people and things by reading pages 71 - 74 in A Career Planning Guide.

Then do the following checklist to reflect
- the level at which you are interested in working with D/P/T.
- the ability you have to work with D/P/T.

Interests

I am interested in working with Data
at a high level H_____
at a medium level M_____
at a low level L_____

I am interested in working with People
at a high level H_____
at a medium level M_____
at a low level L_____

I am interested in working with Things
at a high level H_____
at a medium level M_____
at a low level L_____

Capacities

I am capable of working with Data
at a high level H_____
at a medium level M_____
at a low level L_____

I am capable of working with People
at a high level H_____
at a medium level M_____
at a low level L_____

I am capable of working with Things
at a high level H_____
at a medium level M_____
at a low level L_____

Physical Activities Factors:

Every occupation makes certain physical demands on its workers. Some workers, such as pilots, must use their eyes a lot so they must have good vision. Some workers must lift heavy objects all day so they must be strong. The list presented below describes physical activities involved in different occupations.

Choose the activities you could not tolerate if they were involved in your regular tasks. Indicate your choices with a check mark.

CODE		WORK WHICH REQUIRES:
S		Sitting most of the time but occasionally lifting or carrying objects weighing less than 10 pounds.
L		Lifting or carrying a maximum of 20 pounds and a minimum of 10 pounds frequently.
M		Lifting or carrying a maximum of 50 pounds and a minimum of 20 pounds frequently.
H		Lifting or carrying a maximum of 100 pounds and a minimum of of 50 pounds frequently.
VH		Lifting or carrying objects weighing more than 100 pounds frequently.
PA 2		Climbing and/or balancing
PA 3		Stooping, kneeling, crouching, or crawling in cramped areas.
PA 4		Reaching, handling, or feeling objects.
PA 5		Giving information to others by speaking accurately and clearly.
PA 6		Hearing what others are saying or recognizing differences in sounds.
PA 7		Seeing the characteristics of objects clearly.

If you have any difficulty, refer to pages 60 - 63 in A Career Planning Guide.

Environmental Conditions:

Different occupations have different conditions which surround the work setting. For example, in some occupations the work is done inside. In others it is done outside. In some occupations there is a lot of noise. In others there is very little noise.

As you did with Physical Activities choose from the following Environmental Condition Factors those you could not tolerate if they were involved in your regular work tasks. (Indicate your choices with a check mark.)

CODE		WORK WHICH IS DONE:
I		Inside (protected from weather conditions, but not necessarily from temperature changes).
O		Outside
B		Both inside and outside (approximately equal amounts of inside and outside work.)
EC2		In extremes of cold with temperature changes.
EC3		In extremes of heat with temperature changes.
EC4		In wet or humid conditions.
EC5		Near noise or vibration.
EC6		In situations where there is a definite risk of injury.
EC7		In situations involving dust, fumes, odour, mists, gases or poor ventilation.

If you have any difficulty, refer to pages 63 - 65 in A Career Planning Guide.

Assessing Your General Educational Development Level

Your level of General Educational Development includes all the academic education you have had in school subjects like mathematics and language. It is determined by the number of years you have spent in elementary school, high school and college, or by the level of education you may have gained by study on your own. It does not include study directed toward a specific job.

Years of School	GED Level
17 years or more	6
13 to 16 years	5
11 to 12 years	4
9 to 10 years	3
6 to 8 years	2
up to 6 years	1

Your present GED level is _____

GED level you would like to obtain is _____

Assessing Your Specific Vocational Preparation Level

Training for a specific work field is called Specific Vocational Preparation (SVP). Usually this training is taken to learn new skills for work in particular occupations. SVP can run from a few hours of practice on the job to many years of study at a technical institute or university.

Length of Preparation	SVP Level
Short Demonstration	1
Anything beyond short demonstration and up to 30 days	2
Over 30 days up to 3 months	3
Over 3 months up to 6 months	4
Over 6 months up to 1 year	5
Over 1 year up to and including 2 years	6
Over 2 years up to and including 4 years	7
Over 4 years up to and including 10 years	8
Over 10 years	9

Best estimate of present SVP level is _____

SVP level I would like to obtain is _____

SESSION IV

Objectives

1. To learn to use self-information to generate occupational alternatives by
   a) learning to use the C.C.D.O.
   b) learning the concepts "broadening" and narrowing" and how to arrange information in preparation for keysorting
   c) keysorting

Activities

Following the instructions of your group leader

1) learn how to use the C.C.D.O, Volumes I and II

2) learn how to generate alternatives using a C.C.D.O.

3) prepare to keysort by
   a) listening to the instructor explain the concepts "broadening" and "narrowing"
   b) learning how to arrange your self-information according to these concepts
   c) watching a demonstration of the keysort.

4) With your own self-information, use the keysort to produce a list of occupations (and their C.C.D.O. numbers) that
   a) are of interest to you
   b) you wish to research more extensively.

HOMEWORK

1. Arrange occupational alternatives in order of interest. Choose at least three you would like to research more extensively.

2. Read chapters seven and eight in A Career Planning Guide.

SESSION V

Objectives

Referring to the "Occupations" column of the decision-making model

1. To generate questions re: what you need to know about occupations
2. To learn about sources of occupational information
3. To learn to evaluate the quality of print material
4. To discuss how occupational information will be used

Activities

1. Refer to the decision-making model. Do you understand what has been done and what is left to do? If not, ask your instructor to clarify this for you.

2. In the workbook make a list of the questions you will use to gather occupational information by
   a) referring to Chapter Seven in A Career Planning Guide
   b) adding any questions that apply particularly to you eg. If you are not able/willin to relocate, you may add the question "Is this occupation available in or around ___________?"

Refer to your personal inventory, personal resource list and list of constraints for questions of this type.

3. Sources of information
   Become familiar with sources of information in the Career Centre.
   Referring to Chapter Eight in A Career Planning Guide discuss other sources of information to which you have access.
   Remember that the best sources of occupational information are employers and employees already involved in the occupation.

4. Evaluating print materials
   When using print materials as a resource always ask
   a) when was it printed?
   b) where was it printed?
   c) why was it printed?

5. Use of occupational information
   The occupational information you are gathering should be used to
   a) increase your occupational knowledge and validate that information you already have
   b) provide a basis for comparing your occupations and evaluating their suitability for you
   c) plan

HOMEWORK

1. Read Chapters Nine and Ten in A Career Planning Guide.

2. Spend as much time as possible doing independent research.

GATHERING OCCUPATIONAL INFORMATION

	SELF	PRODUCT : OCCUPATION	PLAN
WHAT YOU NEED TO KNOW			
WHERE YOU WILL GET IT			
HOW TO USE IT			

SESSION VI

Objectives

1. To review the progress you have made with your research.
2. To build an outline for doing more detailed research and/or evaluating occupations.
3. To discuss action planning in terms of
    a) what you need to know to do effective planning
    b) where you will get that information
    c) how you will use that information.
4. To conclude the Career Planning Workshop

Activities

1. Review of progress.

    Be prepared to discuss with your instructor and the group
    - your progress in researching occupations
    - any decisions you have made so far
    - alternatives you considered before you made each decision.

2. Building an outline for more detailed research and/or evaluation.

    Although you have already begun your research about occupations, it is likely that you have neglected to seek information about some of your personal requirements. Perhaps you have forgotten to consider the constraints you listed in Session III or the resources you have to support you. In order to refine the questions you ask while doing research, follow the directions below to make an outline that will include your specific needs and wants.

    First, consider the types of information you have already gathered.

    a) expected satisfactions from work
    b) personal inventory
    c) personal resource sheet
    d) constraints
    e) aptitude test
    f) C.C.D.O.
    g) research about occupations

    From each category choose the factors that are most important to you and write them on the left side of the form provided in this workbook. (See the example done by a former teacher). Do not feel that you must use every category - choose those factors that are very significant to your upcoming decision. Don't be afraid to use different colored pens etc. to draw attention to certain factors. For instance, any constraint that could jeopardize or determine the final decision should be clearly marked.

When you have finished, write the titles of the occupations you are most interested in under the headings, Alternative A, Alternative B. Using this form now you should be able to see how thorough your original research was, and what you have left to do. Add other pages as you continue adding alternatives. When your research is complete, you will find this a useful form with which to compare and evaluate the suitability of your alternatives.

3. Action Planning

The purpose of action planning is to help you move effectively from making a decision to achieving a goal. First you must consider the important steps in planning, then try to put together a plan for yourself.

Instead of spending valuable class time thinking of all the issues in planning, you will find some of them already listed in your workbook. Discuss these with the instructor and your group; add any others you think of.

Now, keep these factors in mind try to outline a plan that will help you reach your goal.

Put your plan in action.

Good Luck!!

RESEARCH/EVALUATION OUTLINE

CRITERIA	ALTERNATIVE A	ALTERNATIVE B
Expected Satisfactions a) meeting new people b) having responsibility c) working with adults		
Wish to avoid a) homework or demands on my personal time b) disciplining kids		
Personal Resources a) Education: B.A., B.Ed. b) have own car c) very supportive husband d) could afford night school course		
Constraints a) can't leave Edmonton b) hours should match my children's school		
Min. salary acceptable Salary I would like Benefits		
P.A. preferred: Inside work No heavy lifting		
EC preferred: no dust, fumes, cold Hrs. preferred: straight days but some night work okay		
Chances of employment Advancement		
Planning required		

RESEARCH/EVALUATION OUTLINE

CRITERIA	ALTERNATIVE A	ALTERNATIVE B

GATHERING INFORMATION TO PLAN

	SELF	OCCUPATIONS	PLAN
WHAT YOU NEED TO KNOW			- financial resources/sources of funding - time lines - support systems - how to anticipate possible barriers along the way - Plan B - issues of job search
WHERE YOU WILL GET INFORMATION			- from past experience - from research - from institutions - from friends or other knowledgeable people eg. group leaders, counsellors
HOW YOU WILL USE IT			- to re-evaluate - to act - to deal with problems as/if they arise

Appendix B

The Career Development Inventory, Adult Form I, is reproduced with the permission of the Canada Employment and Immigration Commission.

CAREER DEVELOPMENT INVENTORY

ADULT FORM I

Donald E. Super

Robin S. Zelkowitz   Albert S. Thompson

NAME ______________________________ DATE ________________________

This inventory consists of 60 statements of career concerns. How much thinking or planning have you done in these areas? Rate each statement according to the following scale:

5. No longer a concern.
4. Some concern but declining in importance.
3. A strong concern at the present time.
2. A growing concern; beginning to become important.
1. Have not yet had to think seriously about this.

Career Concerns	1	2	3	4	5
1. Finding out where my talents really lie.					
2. Getting to know myself better.					
3. Clarifying my ideas about the type of work I would really like to do.					
4. Deciding what I really want to do for a living.					
5. Finding out what line of work I am really best suited for.					
6. Finding an occupation that will allow for expression of my interests and abilities.					
7. Learning more about various kinds of opportunities that might be open to me.					
8. Finding out more about what people do in certain kinds of work in which I think I might be interested.					
9. Learning what skills and training are required for certain jobs in which I think I might be interested.					
10. Finding a type of work in which I can make a good living.					
11. Choosing the best career alternatives I now see.					

Career Concerns	1	2	3	4	5
12. Getting a temporary job that will help me decide what kind of work I really might go into.	____	____	____	____	____
13. Talking about career decisions with someone who knows enough to be helpful.	____	____	____	____	____
14. Choosing a job, among the several that interest me, that will provide the most challenge.	____	____	____	____	____
15. Finding a line of work that really appeals to me.	____	____	____	____	____
16. Making sure of my current occupational choice.	____	____	____	____	____
17. Choosing a job that will really be satisfying for me.	____	____	____	____	____
18. Specializing in an interesting field that really has a future.	____	____	____	____	____
19. Deciding what kind of training to get for the field that really interests me.	____	____	____	____	____
20. Finding an opportunity to get the kind of training and experience I now think I need.	____	____	____	____	____
21. Getting started in my chosen field.	____	____	____	____	____
22. Deciding how to qualify for the work I now want to do.	____	____	____	____	____
23. Getting the right kind of job once I have the necessary knowledge and skills.	____	____	____	____	____
24. Qualifying in the specialty I like best.	____	____	____	____	____
25. Getting the special training and experience I need.	____	____	____	____	____
26. Meeting people who can help me get started in my chosen field.	____	____	____	____	____
27. Taking steps that will help me achieve my ambitions.	____	____	____	____	____
28. Finding opportunity to do the kind of work I really like.	____	____	____	____	____
29. Making specific plans to achieve my current career goals.	____	____	____	____	____
30. Deciding what sacrifices I am willing to make in order to reach my current career goals.	____	____	____	____	____

Career Concerns	1	2	3	4	5
31. Settling down in a job that I can really stay with.					
32. Making a place for myself in my organization.					
33. Doing things that will help me stay in my chosen job.					
34. Achieving stability in my occupation.					
35. Getting established in the occupation I have chosen.					
36. Finding my own niche in my organization.					
37. Making my place in my organization secure.					
38. Developing special knowledge or skills for my job.					
39. Showing I can make a good living in my job.					
40. Developing a life-style that really suits me.					
41. Consolidating the position I have now made for myself.					
42. Making myself indispensable where I now work.					
43. Developing a reputation in my organization.					
44. Making a reputation in my line of work.					
45. Becoming an authority in my field.					
46. Being a dependable producer.					
47. Becoming especially skillful in my work.					
48. Being liked by the people I work with.					
49. Winning the support of my supervisor and employer.					
50. Meeting people who can help me in my work.					
51. Planning how to get ahead in my established field of work.					
52. Improving my chances of advancement in my current occupation.					
53. Getting ahead in the organization.					
54. Doing the things that make people want me.					
55. Finding ways of making my competence known.					

Career Concerns	1	2	3	4	5
56. Making even more of a success of my present job.	____	____	____	____	____
57. Becoming an outstanding success in my work.	____	____	____	____	____
58. Advancing to a more responsible position.	____	____	____	____	____
59. Becoming a higher level supervisor or manager.	____	____	____	____	____
60. Becoming independent enough to really live the way I would like.	____	____	____	____	____

Appendix C

C.D.B. CHECKLIST

NAME: ______________________________

Make a checkmark next to any of the following statements that are true for you.

In the last three months, I have:

____________ 1. discussed an occupation I am considering with someone employed in that occupation.

____________ 2. read magazine articles or pamphlets about an occupation or group of occupations I am considering.

____________ 3. read a book or books about an occupation or group of occupations I am considering.

____________ 4 taken up a new hobby.

____________ 5. become a volunteer worker.

____________ 6. resigned from a job to travel.

____________ 7. applied for a leave of absence from a job to travel.

____________ 8. purchased equipment related to an occupation I am considering or seeking.

____________ 9. obtained a business license.

____________ 10. formed a corporation or partnership.

____________ 11. visited a Canada Employment Centre.

____________ 12. registered with a placement service (including C.E.C.).

____________ 13. written or revised a resume.

____________ 14. written one or more letters of application.

____________ 15. been interviewed for one or more jobs.

____________ 16 accepted a new job.

____________ 17. started work on a new job.

____________ 18. signed an apprenticeship contract.

____________ 19. telephoned or written to an educational institution for information on programs.

____________ 20. visited an educational institution for information on programs.

____________ 21. contacted the Students Finance Board or another agency for information on financial assistance.

____________ 22. applied for admission to a program of studies.

____________ 23. applied for financial assistance.

____________ 24. been accepted for and completed registration in a program of studies.

____________ 25. applied for a leave of absence from my job in order to study.

____________ 26. quit a job in order to seek further education.

____________ 27. begun attending classes in a program.

____________ 28. applied for promotion in my current job.

____________ 29. redefined my job duties with my employer.

____________ 30. changed my regular hours of work by my own choice (for example, full time to part-time, part-time to full-time, different shift).

____________ 31. applied for further training on my job, or staff development.

Appendix D

Alberta
ADVANCED EDUCATION
AND MANPOWER

FROM David Wasserman
Counsellor Intern
Alberta Career Centre, Edmonton

OUR FILE REFERENCE

YOUR FILE REFERENCE

TO All Career Centre Counsellors

DATE December 9, 1980

TELEPHONE

SUBJECT SCALING THROUGH EXPERT OPINION

I need your help in preparing the scoring scale for an instrument I have designed with the help of the Edmonton Career Centre counsellors. The instrument is called the Career Development Behaviours Checklist, or CDB checklist for short. It is to be used as part of an evaluation of two of the Edmonton Career Centre's programs.

The idea is that certain behaviours demonstrate career development, because they show some kind of commitment to an action plan towards achieving individual career goals. Thus the more of these behaviours a person shows, the greater career development the person has undergone.

The problem with scoring the checklist is that each behaviour clearly does not represent the same amount of commitment. Thus one person who has checked off seven items, for example, is not necessarily equal in commitment to another person who has checked off seven different items.

This is where your help is needed. Please complete and return to me the attached scaling form by January 5. Thanks for your help.

SCALING FORM

NAME: ______________________________

Please circle the number from 1 to 7 which best indicates how much career development (as defined in the memo) is represented by each of the behaviours listed, according to these category labels:

1. No development
2. Little development
3. Some development
4. Moderate development
5. Considerable development
6. Extensive development
7. Very extensive development

1. discussing an occupation I am considering with someone employed in that occupation.

   1 2 3 4 5 6 7

2. reading magazine articles or pamphlets about an occupation or group of occupations I am considering.

   1 2 3 4 5 6 7

3. reading a book or books about an occupation or group of occupations I am considering.

   1 2 3 4 5 6 7

4. taking up a new hobby.

   1 2 3 4 5 6 7

5. becoming a volunteer worker.

   1 2 3 4 5 6 7

6. resigning from a job to travel.

   1 2 3 4 5 6 7

7. applying for a leave of absence from a job to travel.

   1 2 3 4 5 6 7

8. purchasing equipment related to an occupation I am considering or seeking.

   1 2 3 4 5 6 7

9. obtaining a business license.

   1 2 3 4 5 6 7

10. forming a corporation or partnership.

    1 2 3 4 5 6 7

.../2

11. applying for promotion in my current job.

1 2 3 4 5 6 7

12. redefining my job duties with my employer.

1 2 3 4 5 6 7

13. changing my regular hours of work by my own choice (for example, full time to part-time, part-time to full-time, different shift).

1 2 3 4 5 6 7

14. applying for further training on my job, or staff development.

1 2 3 4 5 6 7

The next eight steps are often followed consecutively by people seeking jobs. Please rate each behaviour as if the other behaviours had already taken place. For example, how much more development does starting work on a new job (21) show after a person has accepted a new job (20)?

15. visiting a Canada Employment Centre.

1 2 3 4 5 6 7

16. registering with a placement service (including C.E.C.).

1 2 3 4 5 6 7

17. writing or revising a resume.

1 2 3 4 5 6 7

18. writing one or more letters of application.

1 2 3 4 5 6 7

19. being interviewed for one or more jobs.

1 2 3 4 5 6 7

20. accepting a new job.

1 2 3 4 5 6 7

21. starting work on a new job.

1 2 3 4 5 6 7

22. signing an apprenticeship contract.

1 2 3 4 5 6 7

.../3

The next nine steps are often followed consecutively by people choosing and beginning an educational program. Please rate each behaviour as if the other behaviours had already taken place. For example, how much more development does applying for financial assistance (27) show beyond the development shown by contacting the Students Finance Board or another agency for information on financial assistance?

23. telephoning or writing to an educational institution for information on programs.

1 2 3 4 5 6 7

24. visiting an educational institution for information on programs.

1 2 3 4 5 6 7

25. contacting the Students Finance Board or another agency for information on financial assistance.

1 2 3 4 5 6 7

26. applying for admission to a program of studies.

1 2 3 4 5 6 7

27. applying for financial assistance.

1 2 3 4 5 6 7

28. being accepted for and completing registration in a program of studies.

1 2 3 4 5 6 7

29. applying for a leave of absence from my job in order to study.

1 2 3 4 5 6 7

30. quitting a job in order to seek further education.

1 2 3 4 5 6 7

31. beginning to attend classes in a program.

1 2 3 4 5 6 7

Appendix E

OCCUPATIONAL ALTERNATIVES QUESTION

NAME: ________________________________

List all of the occupations you are considering right now.

Which occupation is your first choice? (If undecided, write undecided).

Appendix F

ALBERTA CAREER CENTRE

INTAKE INFORMATION FORM

Date: ____________________

I. Name:

Address:

Telephone - Residence: ______________ Business: ________________

Date of Birth - Day: __________ Month: ____________ Year: ________

Sex: (circle one) Male Female

II. A. How did you find out about the Alberta Career Centre?

1. Friend or relative
2. Co-worker or employer
3. Newspaper
4. Radio or television
5. Telephone Directory
6. Social worker or other social agency
7. Canada Employment Centre
8. Educational Institution
9. Private counselling agency
10. Other (specify) ________________

B. What is the total amount of full time employment experience you have in all jobs?

1. less than 1 year
2. 1 year or more, but less than 2 years
3. 2 years or more, but less than 5 years
4. 5 years or more, but less than 10 years
5. 10 years or more

C. What was your job title on your most recent job? ________________

D. What was your job title on the job you held longest? ________________

E. What is your current status?

1. paid full-time employment
2. paid part-time employment
3. homemaker
4. unpaid volunteer worker
5. full-time student
6. part-time student
7. unemployed
8. receiving social assistance

F. How long ago were you last employed full-time?

1. less than 1 year, or currently employed
2. 1 year or more but less than 2 years
3. 2 years or more but less than 5 years
4. 5 years or more but less than 10 years
5. 10 years or more

G. How long ago did you last attend an educational institution full-time?

1. less than 1 year, or currently a full-time student
2. 1 year or more but less than 2 years
3. 2 years or more but less than 5 years

4. 5 years or more but less than 10 years
5. 10 years or more

H. What is the highest level of education you have achieved?

1. Less than Grade 9
2. Grade 9
3. Some high school, but no high school diploma
4. High school diploma - not university entrance (not matriculation)
5. High school diploma - university entrance (matriculation)
6. Incomplete apprenticeship
7. Completed apprenticeship
8. Technical school diploma
9. Community college diploma
10. some university studies, no degree
11. Undergraduate university degree
12. Graduate university degree

I. Where did you last attend school full time?

1. Alberta
2. British Columbia
3. Saskatchewan
4. Manitoba
5. Ontario
6. Quebec
7. Atlantic Provinces
8. Northwest Territories or Yukon
9. Other (specify) ______________________

J. What is the name of the last school you attended? ______________________

K. Circle the numbers for all statements that are true for you.

1. I don't know how to decide on a career
2. I am unhappy with my current job
3. I need more information about my abilities
4. I need more information about my interests
5. I want to know more about the kinds of occupations there are
6. I am considering a few jobs, and need more information about these jobs.
7. I want to go back to school, and I need to know what kinds of courses are available.
8. I am considering several programs or courses and need more information about those programs or courses
9. I need more information about financing further education
10. I know what I want to do, but need to know how to go about getting that job
11. I need to change jobs for health reasons
12. I want to develop career counselling skills for use in my job

III. Services selected:

Appendix G

EVALUATION QUESTIONNAIRE

NAME ______________________________

A. How helpful was the program in each of the following areas? Circle the number describing how you feel.

1. Increasing your self-knowledge

Not at all helpful			Moderately helpful			Extremely helpful
1	2	3	4	5	6	7

2. Generating career alternatives

Not at all helpful			Moderately helpful			Extremely helpful
1	2	3	4	5	6	7

3. Increasing occupational knowledge

Not at all helpful			Moderately helpful			Extremely helpful
1	2	3	4	5	6	7

4. Making a choice among alternatives

Not at all helpful			Moderately helpful			Extremely helpful
1	2	3	4	5	6	7

5. Planning action to achieve your goal

Not at all helpful			Moderately helpful			Extremely helpful
1	2	3	4	5	6	7

B Overall, how helpful was the program to you?

Not at all helpful			Moderately helpful			Extremely helpful
1	2	3	4	5	6	7

C. Please make any comments that you feel will help improve the course in the future. (use back of page if necessary)

Appendix H

Follow-Up Evaluation Questionnaire

Name ______________________________

1. Circle the number which shows how satisfied you are right now with each of the following things:

a. The program you attended at the Career Centre

Very Dissatisfied	Somewhat Dissatisfied	Neither Satisfied Nor Dissatisfied	Somewhat Satisfied	Very Satisfied
1	2	3	4	5

b. Your future career as you see it now:

1	2	3	4	5

2. How does your satisfaction now with your future career compare with your satisfaction three months ago with your future career?

Much less Satisfied	Somewhat less Satisfied	Equally Satisfied	Somewhat more Satisfied	Much More Satisfied
1	2	3	4	5

3. Circle the number which show any change of status you may have made in the last three months.

1. Changed from not employed full-time to employed full-time
2. Changed from employed full-time to not employed full-time
3. Changed employers
4. None of the above

4. Sources of satisfaction:

The following list includes areas than can be important in making someone satisfied or dissatisfied with life. Please read the list. Then please write 1 next to the area that is most important to you in making you satisfied or dissatisfied with life generally. Write 2 next to the second most important, 3 for the third most, and so on, to 6 for the least important.

____ a. Family

____ b. Formal educational activities

____ c. Hobbies

____ d. Religious activities

____ e. Social life and friendship

____ f. Work

Please complete other side

5. Circle the numbers for all statements that are true for you.

    1. I don't know how to decide on a career
    2. I am unhappy with my current job
    3. I need more information about my abilities
    4. I need more information about my interests
    5. I want to know more about the kinds of occupations there are
    6. I am considering a few jobs, and need more information about these jobs.
    7. I want to go back to school, and I need to know what kinds of courses are available.
    8. I am considering several programs or courses and need more information about those programs or courses
    9. I need more information about financing further education
    10. I know what I want to do, but need to know how to go about getting that job
    11. I need to change jobs for health reasons
    12. I want to develop career counselling skills for use in my job

6. Please write any comments you may wish to make about the program or Career Centre services below.

Appendix I

Instructor's Rating Sheet

Please give your judgement of how helpful the workshop or seminar was for the general career development of each participant by listing their names below and circling the appropriate number. Rate all participants who attended for any length of time.

Instructor's Name ____________________

Date of final session ________________

Participant	Not al all helpful			Moderately helpful			Extremely helpful
1. ____________________	1	2	3	4	5	6	7
2. ____________________	1	2	3	4	5	6	7
3. ____________________	1	2	3	4	5	6	7
4. ____________________	1	2	3	4	5	6	7
5. ____________________	1	2	3	4	5	6	7
6. ____________________	1	2	3	4	5	6	7
7. ____________________	1	2	3	4	5	6	7
8. ____________________	1	2	3	4	5	6	7
9. ____________________	1	2	3	4	5	6	7
10. ____________________	1	2	3	4	5	6	7
11. ____________________	1	2	3	4	5	6	7
12. ____________________	1	2	3	4	5	6	7
13. ____________________	1	2	3	4	5	6	7
14. ____________________	1	2	3	4	5	6	7
15. ____________________	1	2	3	4	5	6	7
16. ____________________	1	2	3	4	5	6	7
17. ____________________	1	2	3	4	5	6	7
18. ____________________	1	2	3	4	5	6	7
19. ____________________	1	2	3	4	5	6	7
20. ____________________	1	2	3	4	5	6	7

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